TECHNOLOGY DEPT.

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Gas Journal

VOL. 286. 108th YEAR. LONDON, APRIL 25, 1956. Nº 4841 PRICE 1/6

THE SCHWANK SYSTEM

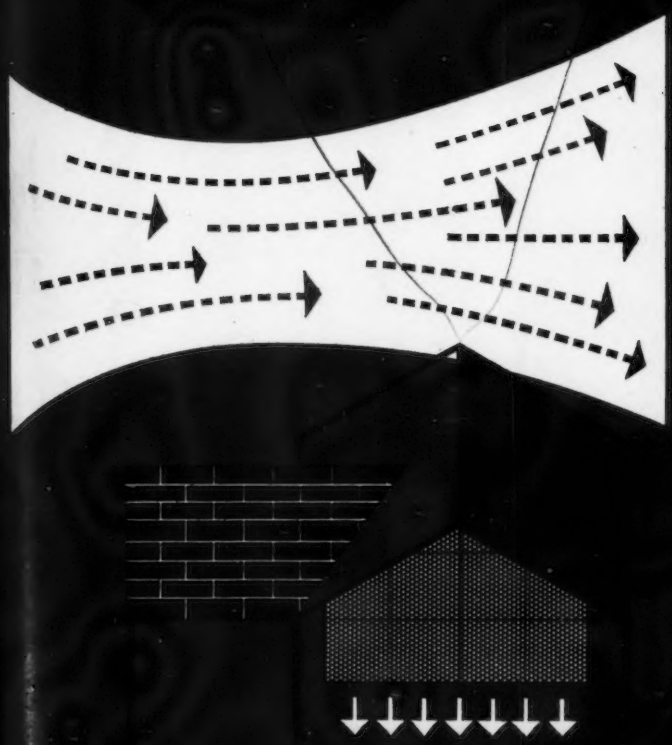
Patent No. 700559

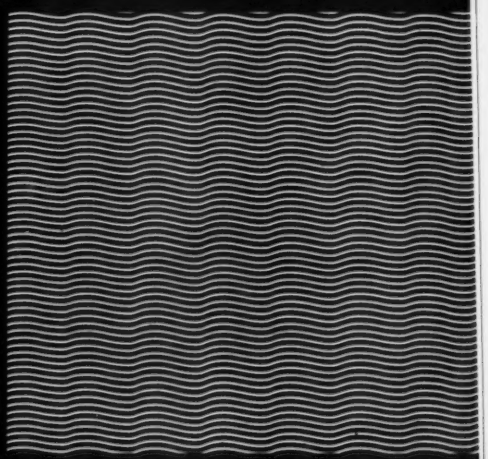
A REVOLUTIONARY APPROACH TO SPACE HEATING

Here is an Infra Red radiant system using low pressure gas wherein the air-gas mixture is fired through porous ceramic plates, which have a low thermal conductivity.

The Units are made for both horizontal and vertical mountings and are ideally suitable for high buildings or for large spaces in which there is considerable air movement.

Many difficult heating problems can be solved with marked economy by the Schwank System incorporated in the Parkinson & Cowan Industrial Products Space Heating Units.





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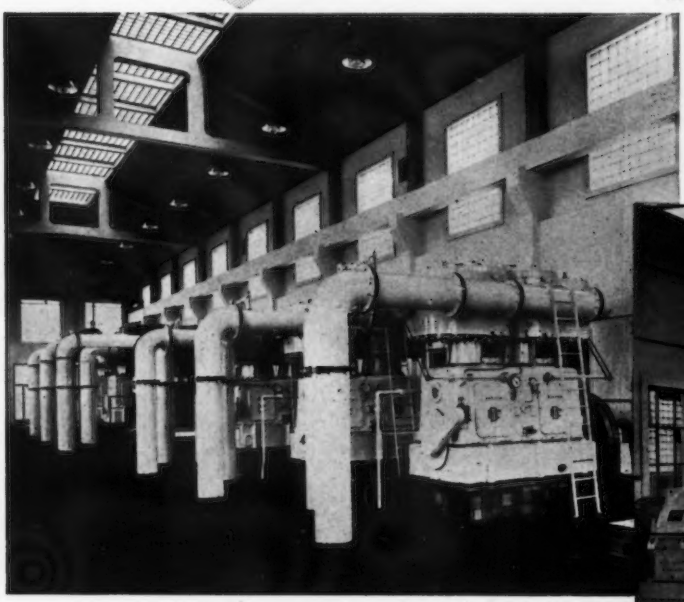
20,000,000 CUBIC FEET OF GAS PER DAY

The Compressor House at Partington, Manchester Group of the N.W.G.B., holding six complete sets of Gas Compressors. Each machine driven through speed reduction gear units arranged through gas tight wall glands



BASE YOUR DECISION ON APPLIED EXPERIENCE AND EFFICIENCY

Photographs by courtesy of N.W.G.B.

Illustrations show the interior of the Compressor House comprising:
3 – Gas Compressors – 22½" dia. x 12" stroke (2 variable speed and 1 constant speed), each capable of 160,000 cu. ft. per hour, running at 325 R.P.M. at 20 lbs. per sq. inch outlet pressure. 3 – 37" dia. x 14" stroke (2 variable speed and 1 constant speed), each capable of 500,000 cu. ft. per hour running at 290 R.P.M. at 10 lbs. per sq. inch outlet pressure. 1 – Future machine 26½" dia. x 12" stroke (constant speed), 250,000 cu. ft. per hour running at 325 R.P.M. at 10 lbs. per sq. inch outlet pressure.

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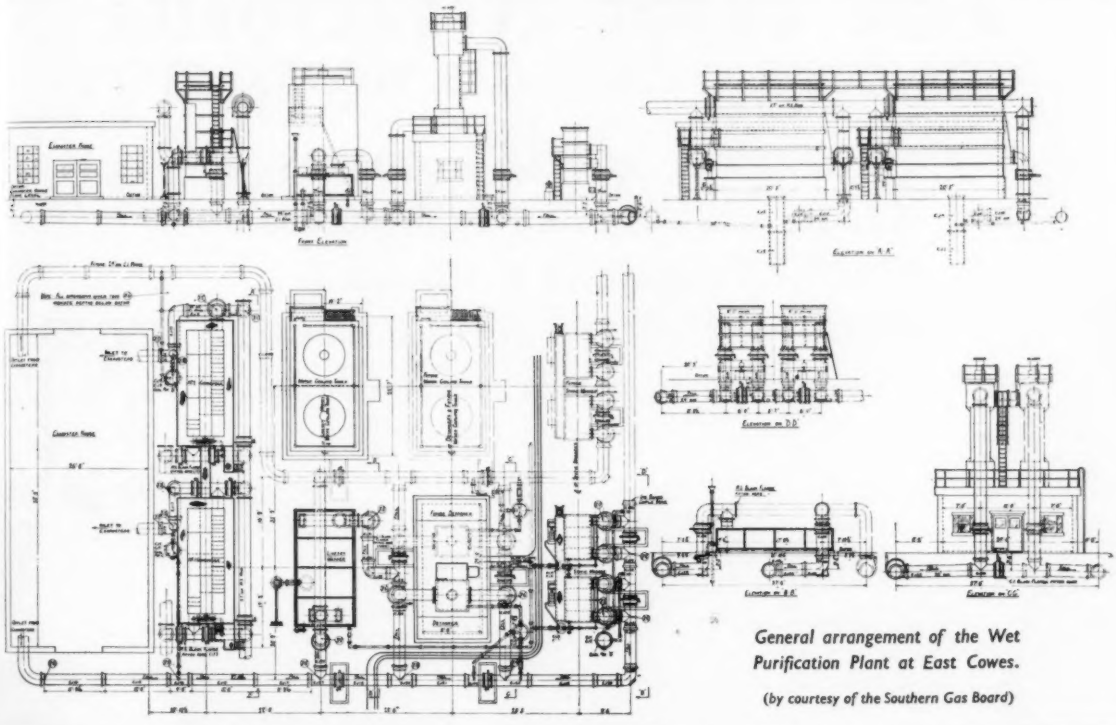
WET PURIFICATION PLANT

by DEMPSTERS of MANCHESTER



General arrangement of the Wet Purification Plant at East Cowes.

(by courtesy of the Southern Gas Board)

The Wet Purification Plant illustrated above comprises 2 Condensers, a Water-cooling Tower, Livesey and Static Washers, and an Electrostatic Detarrer.

We have long been experienced in the design, manufacture, and installation of the ancillary Plant used in the Gas Industry, and recent extensions in our Technical Departments and Works have vastly increased our scope. In consequence our activities extend into the Petroleum, Chemical, and Allied industries.

Our Works are well equipped and our available services include facilities for the stress-relieving of welded products, the thorough examination of welding by means of X-rays, and the use of isotopes for gamma ray testing where necessary.

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MAKERS OF HIGH QUALITY
BY-BRODUCT and CHEMICAL PLANT - CONDENSERS - CONNECTIONS
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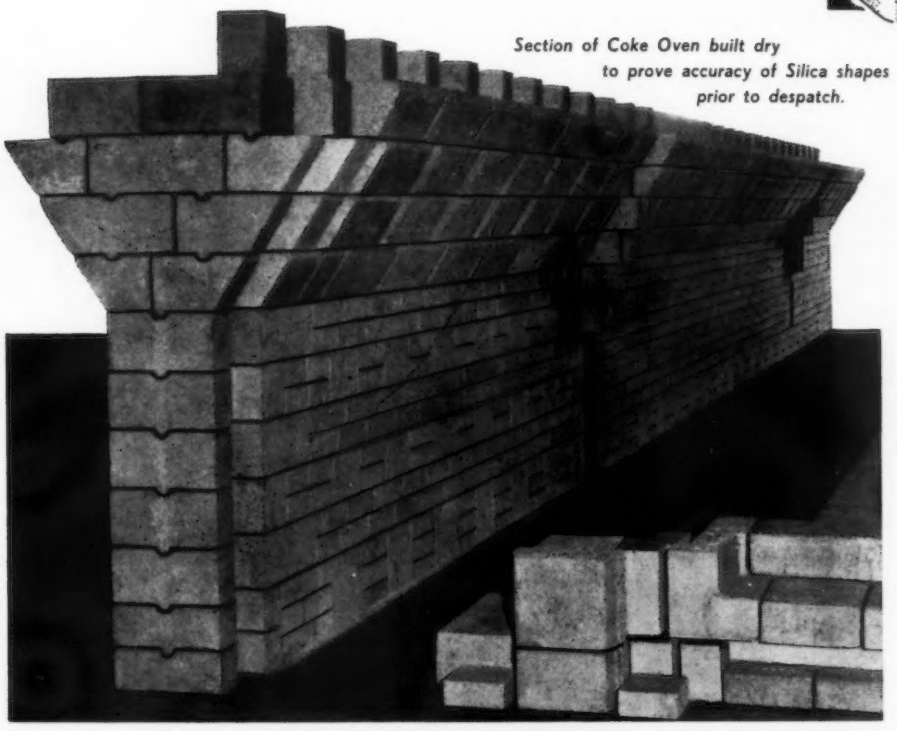
SPECIAL NON-SPALLING HIGH-ALUMINA MATERIALS FOR DOOR JAMBS and BOTTOM SECTIONS OF VERTICAL RETORTS

Our Technical Department is always available for consultations on recent developments.



Section of Coke Oven built dry to prove accuracy of Silica shapes prior to despatch.

IT PAYS TO USE CONSETT REFRACTORIES

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TELEPHONE CONSETT 341 (10 LINES) TELEGRAMS STEEL, PHONE, CONSETT

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The latest Electrolux GAS REFRIGERATOR

...sized and priced for the majority of homes

You open the door to increased Electrolux Gas Refrigerator sales in 1956 by opening the door of this handsome CREAM refrigerator. Let your customers admire its turquoise facings . . . its turquoise doorshelves. Also let them see this model in gleaming WHITE. Tell them why this latest Electrolux—built for long, dependable *silent* service—offers so much at a family man's price.

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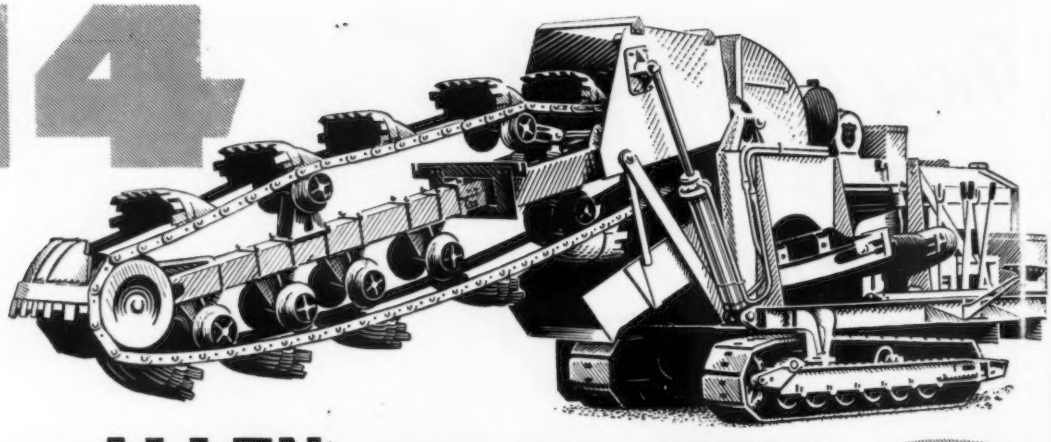

A NEW ALLEN TRENCHER 30

The ALLEN 14-30 completes a range of all-British trenchers world-renowned for continuous hard work, long life, and freedom from breakdown. It can dig trenches from 14 in. to 30 in. wide, to a depth of 8 ft. 6 in., and has many fine features.

For smaller trenches the model 12-21 is the machine, while for wide trenches down to 14 ft. deep the 16-60 has no equal.

There is an ALLEN trencher for *your* job.
Illustrated catalogues gladly sent on request.

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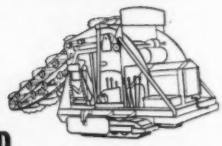

16-60 *Trencher*

12-21 *Trencher*

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Cast Iron Purifiers temporarily erected in our Works prior to despatch

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Refractory Concrete*

GIVES YOU THESE 6 ADVANTAGES

1 LOW COST OF MATERIALS

Both proprietary castable mixes† — incorporating Ciment Fondu—and refractory concrete made on site show considerable savings over special firebrick shapes.

2 LOW INSTALLATION COSTS

The advantages of concrete construction are carried into furnace building. Refractory concrete completely eliminates tedious and expensive grinding and facing of bricks.

3 FLEXIBILITY OF DESIGN

Concrete construction techniques can be easily adapted to meet your particular design requirements. Monolithic construction eliminates leaky joints and new design fields are opened to the Engineer. *REMEMBER*—Simplification means lower initial cost and cheaper maintenance.

4 RESISTANCE TO COMBUSTION GASES

The well known corrosion-resisting properties of Ciment Fondu are accentuated when it is incorporated into refractory concrete. This fact—coupled with the gas-tightness of monolithic construction—gives maximum protection for steel shells and supports.

5 AVOIDANCE OF DELAY

By keeping a few bags of Ciment Fondu or a proprietary castable mix in your works, you have complete insurance against costly delays. In the case of small repairs a proprietary castable mix is more convenient. There are many reputable manufacturers throughout the country who will be pleased to supply you with a complete range of refractory and insulating concrete mixes.

6 INSULATION WITHOUT EXTRA COST

Refractory concrete has a lower conductivity than its firebrick counterpart:—8" of refractory concrete has greater insulation value than 12" of firebrick. Composite units of refractory and insulating concretes can be cast without fear of subsequent separation. *REMEMBER*—a wide range of available aggregates can give you a great range of insulation values, thereby making this material *one of the most versatile refractories known.*

TECHNICAL LITERATURE DEALING WITH SPECIFIC USES OF REFRACTORY CONCRETE IS AVAILABLE ON REQUEST
YOUR ENQUIRIES ARE INVITED AND WILL BE DEALT WITH IMMEDIATELY

* *Refractory Concrete is a mixture of CIMENT FONDU and crushed refractory aggregates*

CIMENT FONDU
Regd Trade Mark
ALUMINOUS CEMENT

† *A list of suppliers of crushed refractory and insulating aggregates, and of manufacturers of proprietary castable mixes is available on request*

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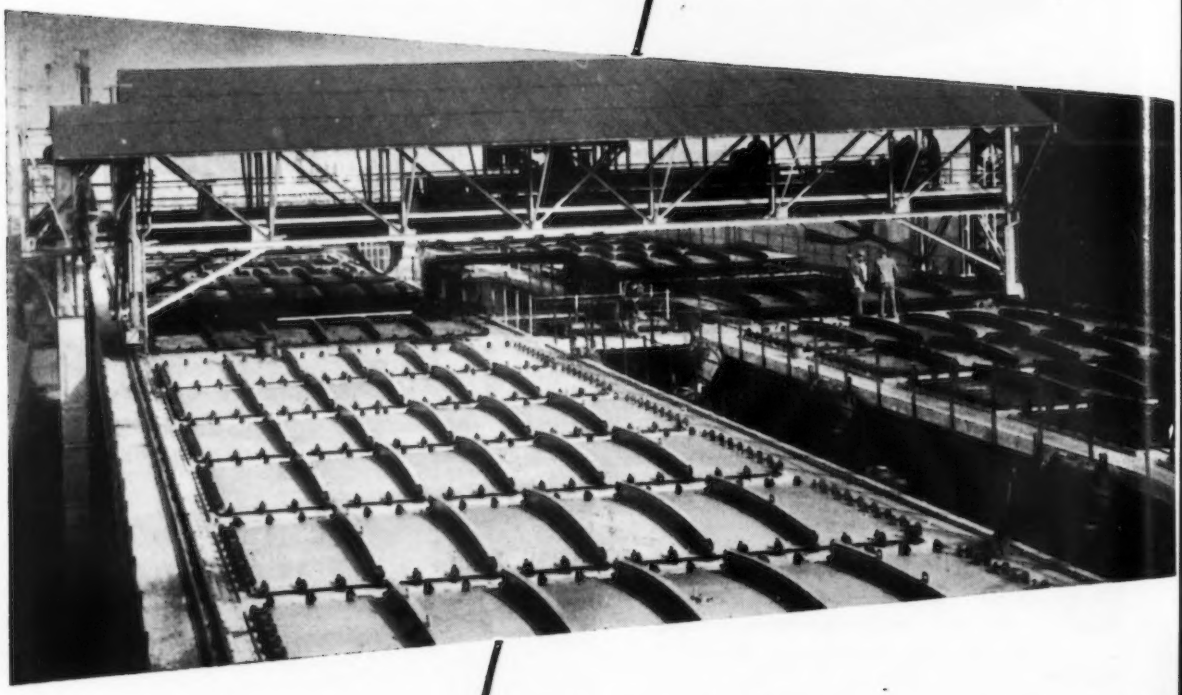

THE MODERN WAY

SPECIAL FEATURES OF THIS PLANT:

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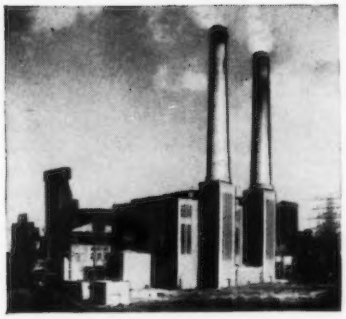

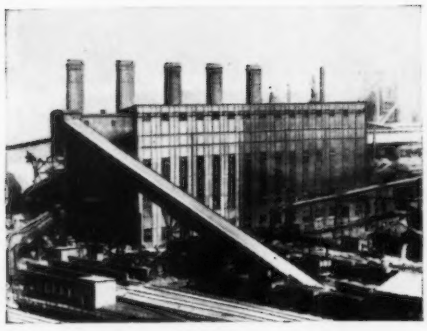

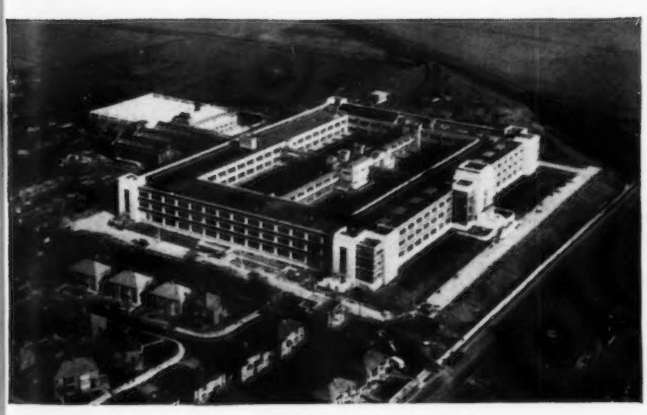

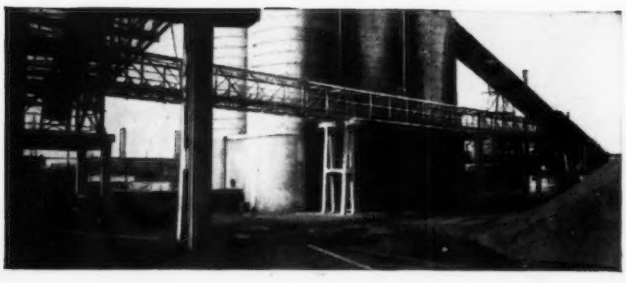

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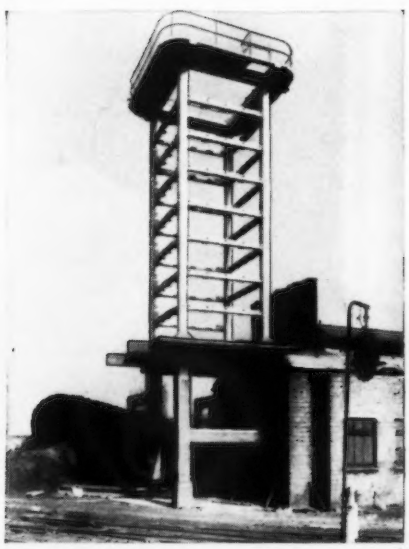

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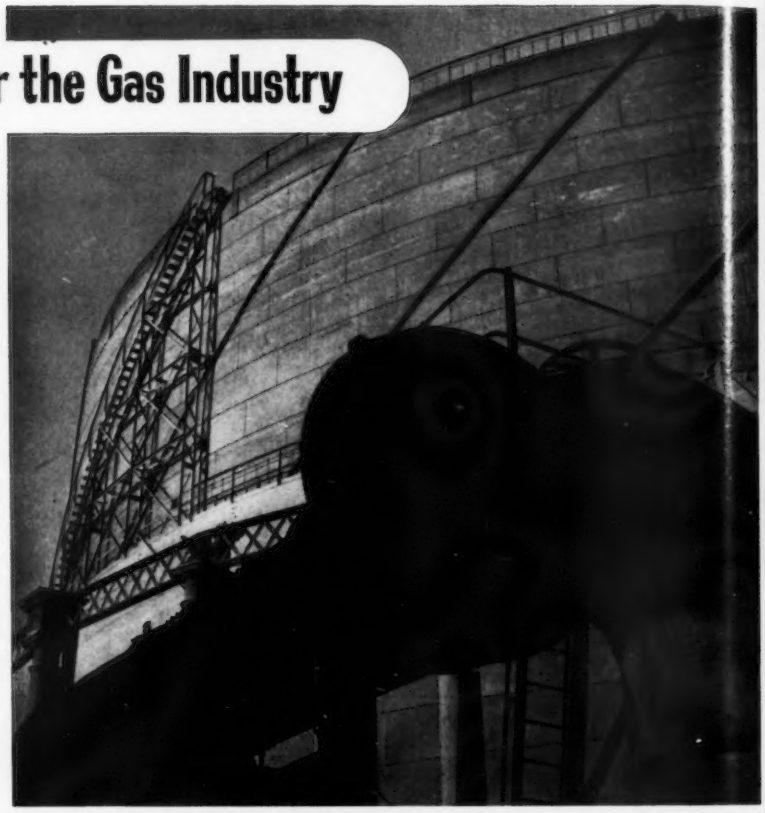
Photograph by courtesy of the Gas Council



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"LUMEROS X" High Heat Resisting Paint.
Represents the latest and greatest advances in the protection of iron and steel subject to very high temperatures. "LUMEROS X" gives adequate protection at temperatures up to 600°C. Good water resistance. No undercoat required. Available in Aluminium or Black.

"METTAL" Aluminium Paint.
A general purpose paint of the highest quality and durability and possessing great brilliance. For indoor and outdoor use. Whilst not specifically designed as a heat resisting coating "METTAL" will stand temperatures around 212°F (100°C).

"METTAL" (Thermal).
Specifically designed for indoor and outdoor use on metal surfaces up to 350° F (177°C).

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SPIRAL GUIDED GASHOLDER & STEEL TANK. 125' x 30' CAPACITY 1,000,000.

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JOINTS for grooved & shouldered pipes

positive joint with a valuable amount of angular and itudinal flexibility.

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COUPLINGS for plain-ended pipes

Viking Johnson Couplings for plain-ended pipes, whether of steel, iron, or other material.

Angular deflections up to 6°. Accessories can be supplied for completing internal and external protection.

Sizes up to 100"; also 'Junior' Couplings for ½" to 2" Pipes.

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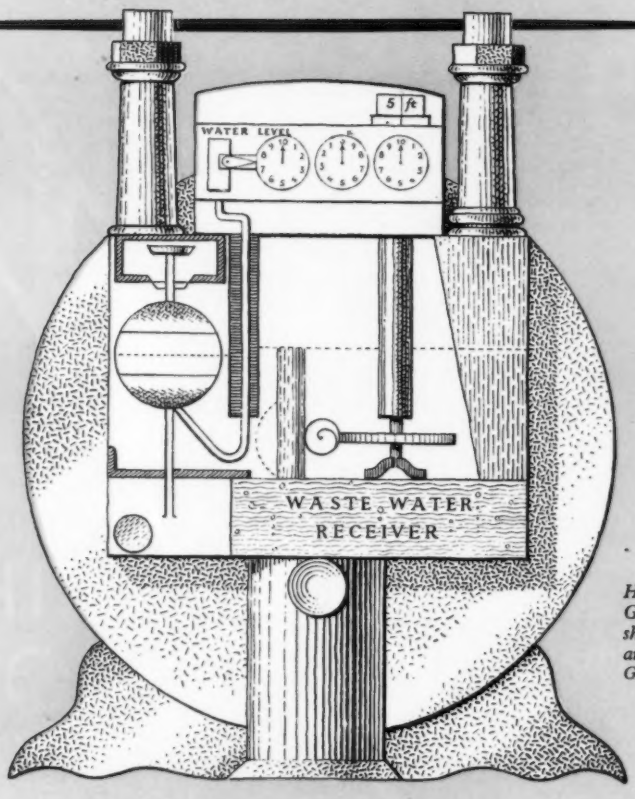
Registered trade marks: 'Victaulic' and 'Viking'

THE PROGRESS OF GAS

1830



Hulett's Patent National Gasmeter, cut away to show working parts. From an advertisement in the GAS JOURNAL, 1850.

By 1830, there were already over 200 gas companies supplying gas for lighting, often in such wasteful competition that there were as many as five mains in a street.

Gas was expensive, fraud not infrequent, and accurate measurement of consumption difficult. One way of detecting fraudulent users was by "jumping the lights". The inspector would blow down the pipes of a known customer of the company or tap the gas pipes with a hammer. His assistant (often a boy) watched the windows of the suspected house. If the lights jumped, it showed that the house was connected to the same mains.

The difficulties of measuring gas consumed were less easily solved. Samuel Clegg made the first meter in 1815, but it was a failure. His station meter (1816) was more successful: it measured the output of gas by displacing an equal volume of water.

"Wet" meters were used in consumers' homes for many years, but were often easily tampered with. Malam made the first workable "dry" meter as early as 1819. Hulett's Patent National Gasmeter, shown here, is an improved "wet" meter, introduced in 1850.

Issued by Imperial Chemical Industries Limited for the interest of the gas industry—an important user of

I.C.I. copper tubes, capillary and compression fittings

Including 'KUTERLON' underground copper tubes

'INTEX P.T.' capillary fittings, 'CONEOR' and 'INSTANTOR' compression fittings

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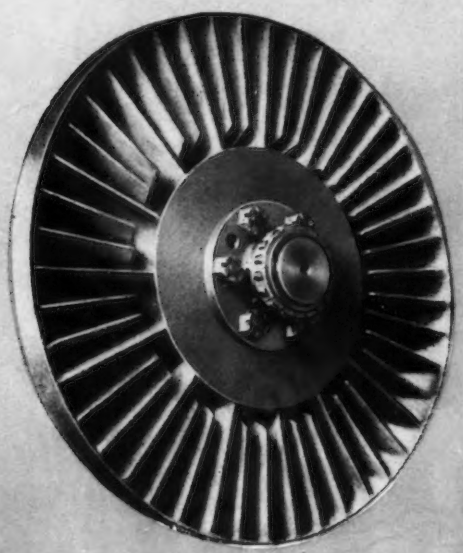

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EARLS COURT

Why Fluidrive

- Lighter starting of heavier loads
- Smoothest possible acceleration
- Torque readily adjusted at site
- Reduced wear and tear
- Better for squirrel-cage motors

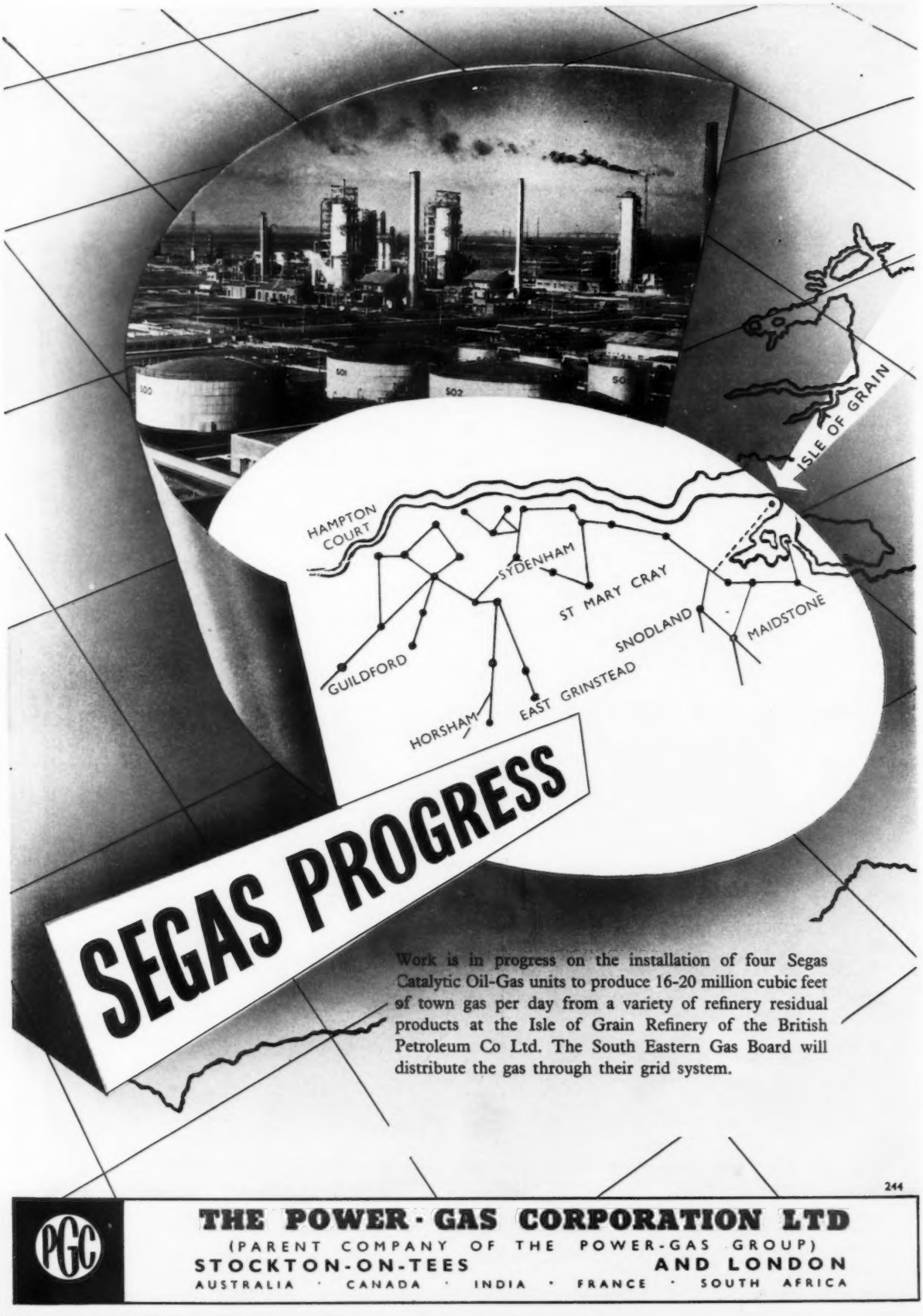
FOR

CRUSHERS

Fluidrive in 200 tons/hr. 42 in. x 48 in. B.J.D. Flextooth Crusher at the East Greenwich Gas Works of the South Eastern Gas Board.

FLUIDRIVE ENGINEERING CO. LTD.

FLUIDRIVE WORKS, WORTON ROAD, ISLEWORTH, MIDDLESEX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244
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THE POWER-GAS CORPORATION LTD
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It is water, weather, and fireproof, and has great mechanical strength and hardness. Its adhesion to concrete is greater than the strength of the concrete itself.

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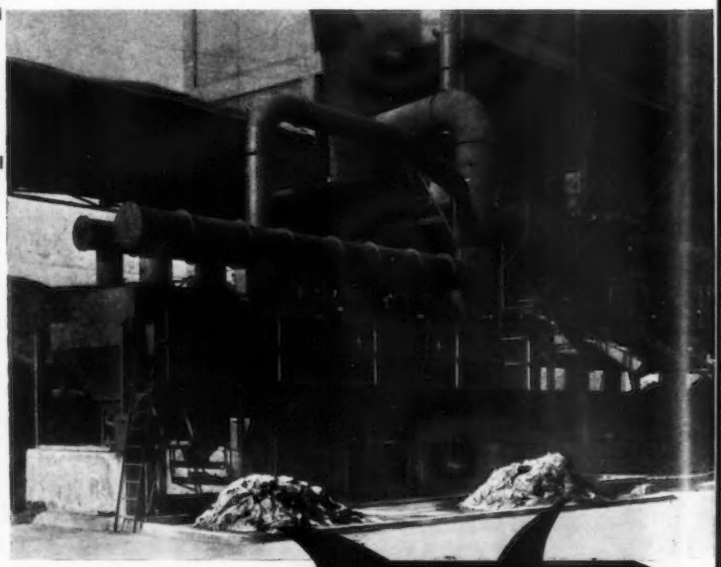

THESE HEAPS, each one a day's accumulation, represent a dense cloud of between ten and twenty million cubic feet of air.

We will gladly discuss your requirements with you.

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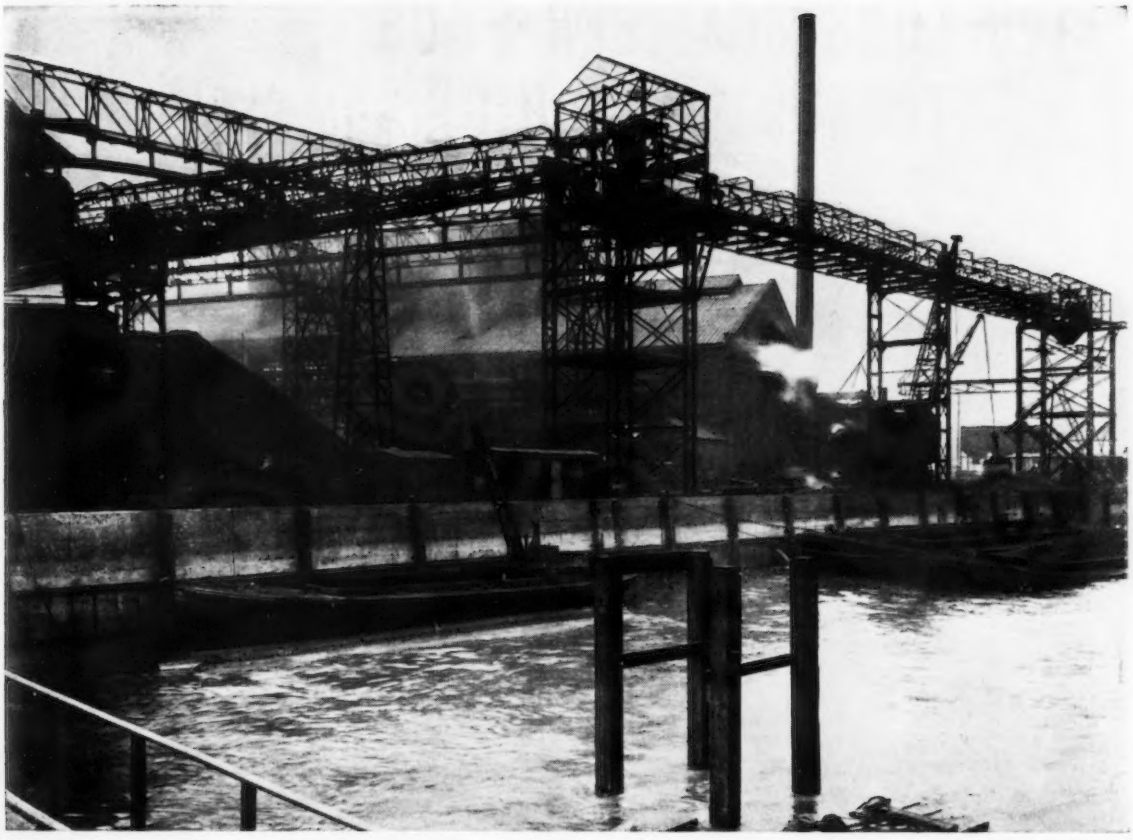

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PART OF A PLANT HANDLING COAL AT 200 TONS PER HOUR BETWEEN RIVER JETTY, STOCKPILES AND RETORT HOUSES.

DESIGNERS & MANUFACTURERS of
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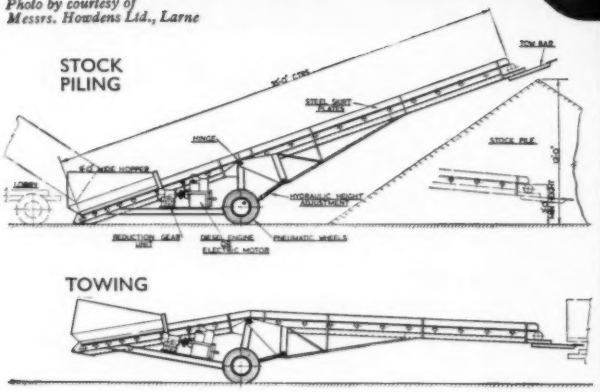
120 TONS COAL PER HOUR STACKED 12 FT. HIGH with a BIG WALRUS

Photo by courtesy of Messrs. Howdens Ltd., Larne



Our range includes; mobile or static conveyors, package stackers, mobile screens, etc.

A brilliant new addition to our famous range of stackers. The "BIG WALRUS" is fully mobile on pneumatic tyres and completely roadworthy having brakes and built in tow bar. The feed hopper is fitted with elevating gear to give a road clearance of 12 ins.

The "BIG WALRUS" gives trouble-free service — stacking to an effective height of 12 ft. Delivery angle can be adjusted from 3 ft. to 13 ft. 3 ins. by either hand or power operated hydraulic gear.

Normal capacity 120 tons coal or 250 tons chrome ore per hour—can be increased if desired.

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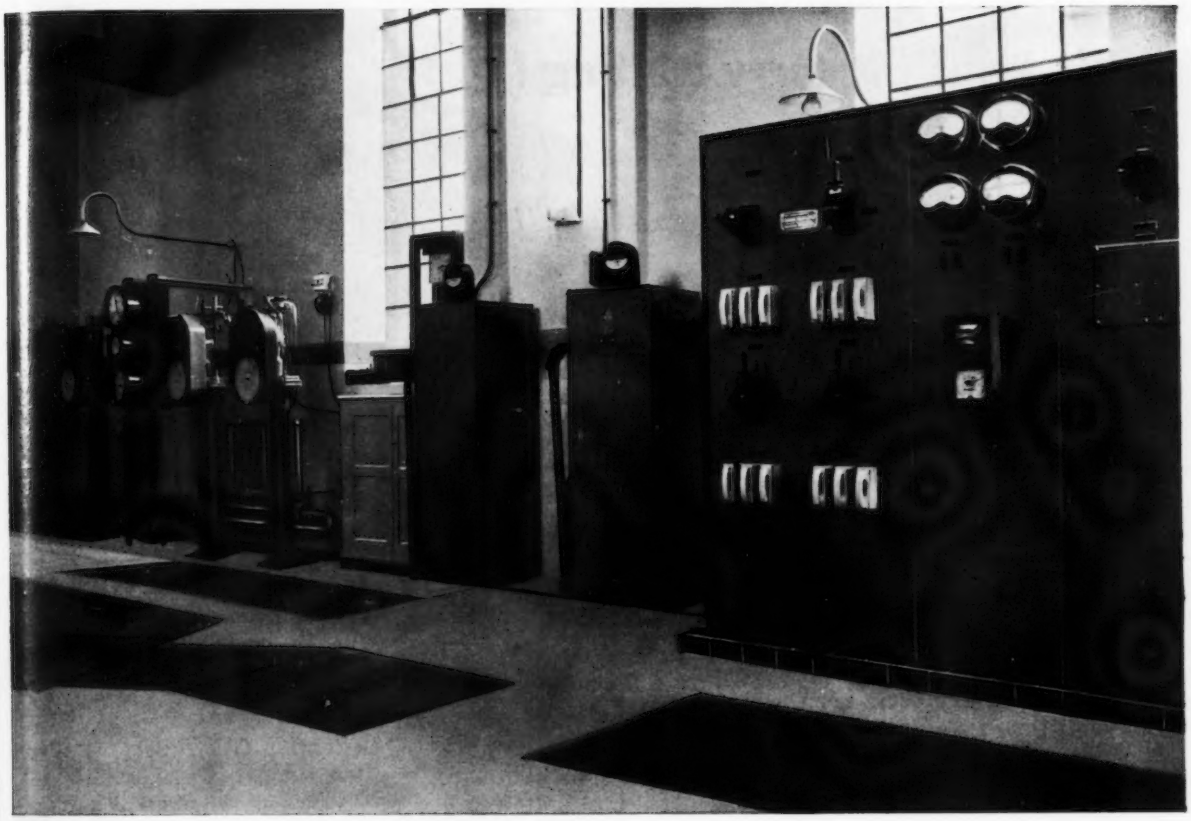

Maintaining Supplies

Maintaining supplies of water for the Borough of Dorchester is the responsibility of the Borough Surveyor and Water Engineer, Mr. R. Davison, M.I. Mun.E., Assoc.I.W.E., by whose kind permission we are able to print this photograph.

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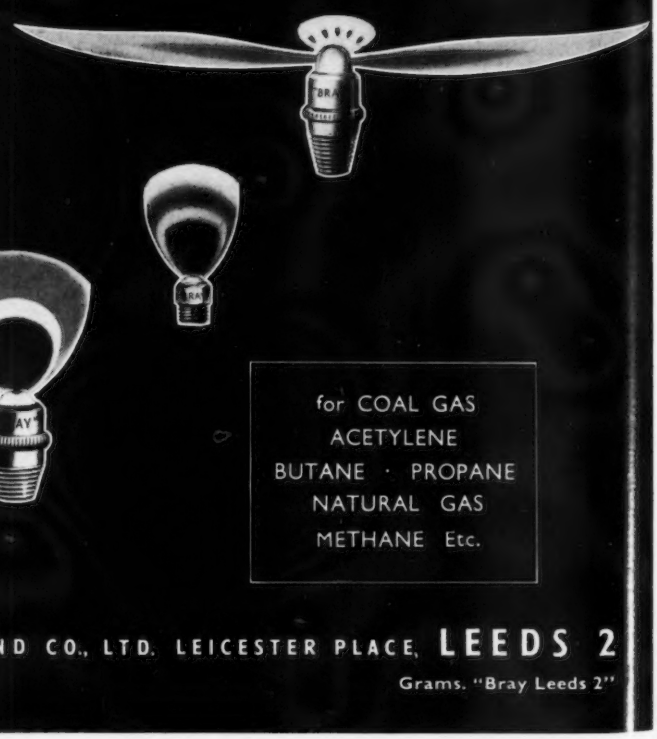

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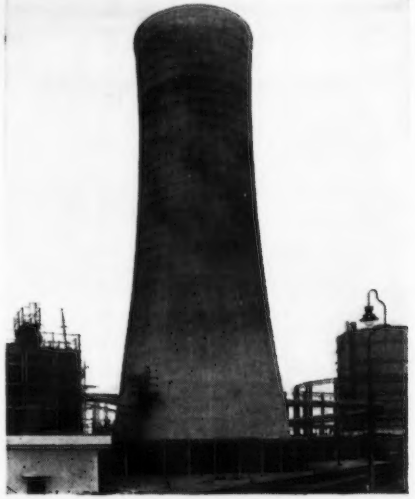
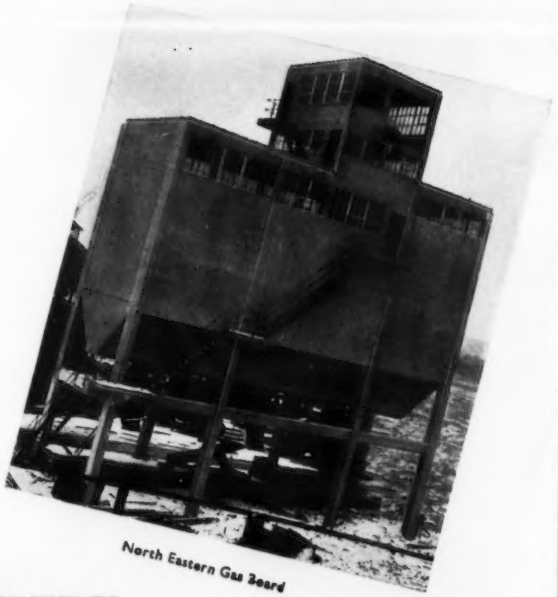


North Thames Gas Board



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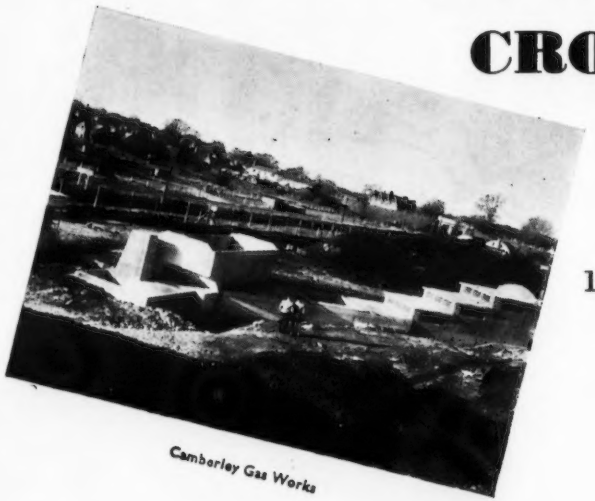

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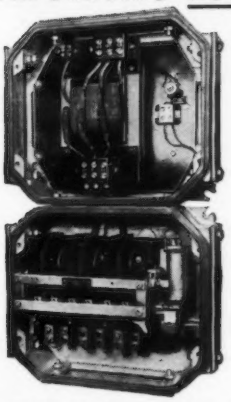

A triple pole 30 amp. Circuit Breaker with core balance transformer and E.L. relay.

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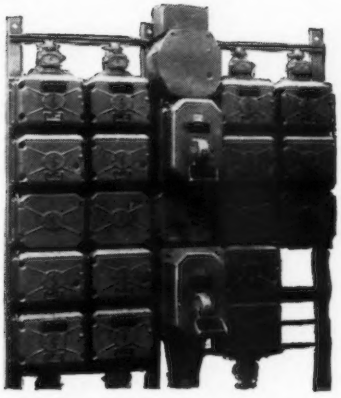

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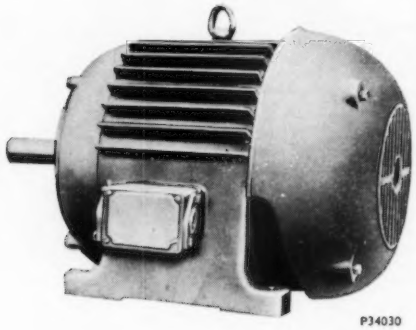
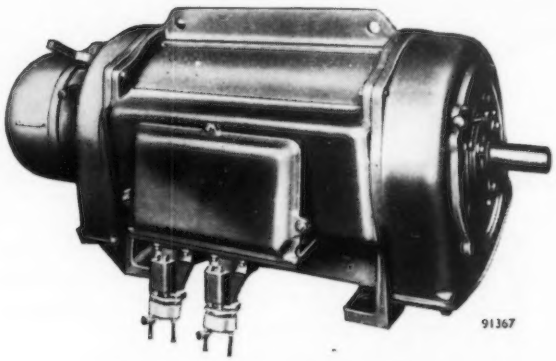
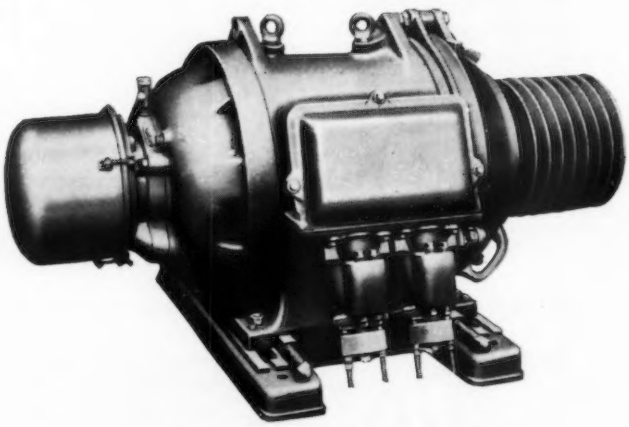


Metrovick type KZ squirrel cage totally enclosed fan cooled motors are available up to 40 hp.



100 h.p. and above type HRW high speed (2,960 rpm) drip-proof slipring motor.



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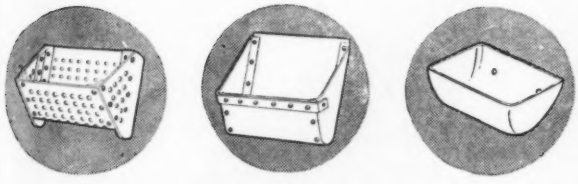

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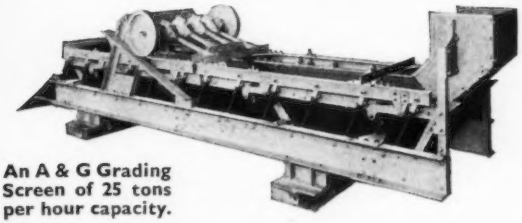
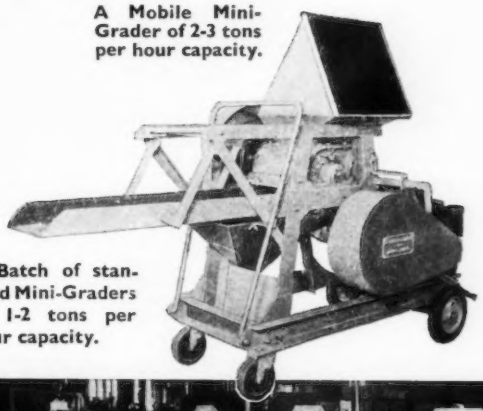
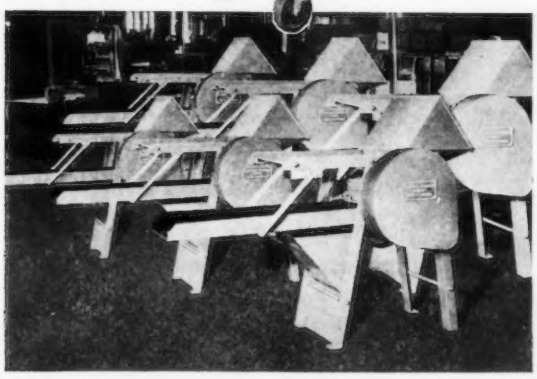


An A & G Grading Screen of 25 tons per hour capacity.

A Mobile Mini-Grader of 2-3 tons per hour capacity.



A Batch of standard Mini-Graders of 1-2 tons per hour capacity.



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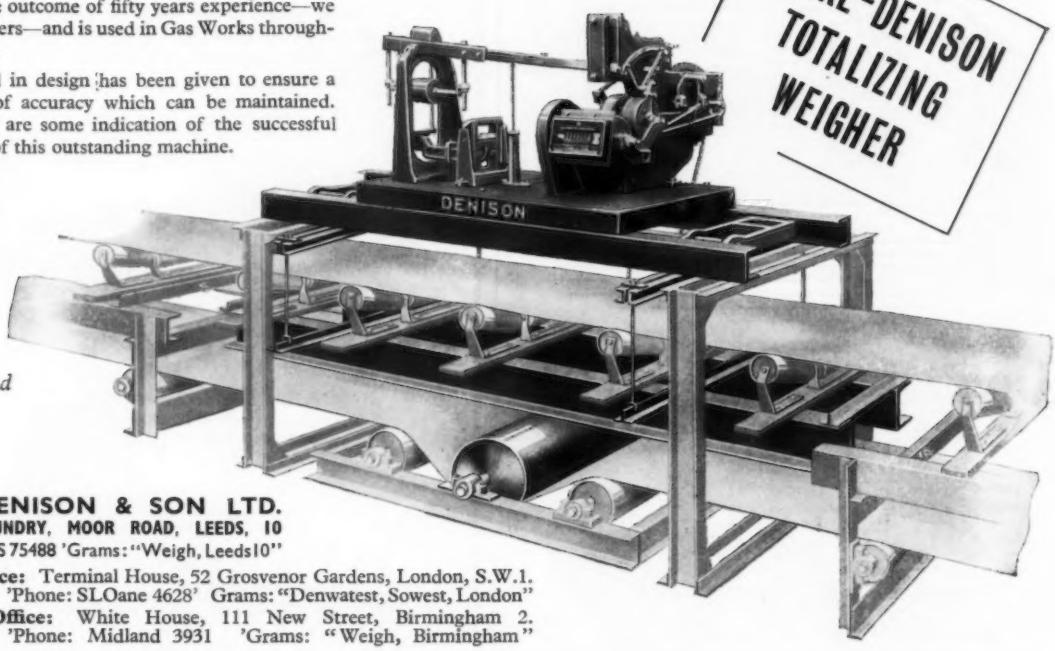

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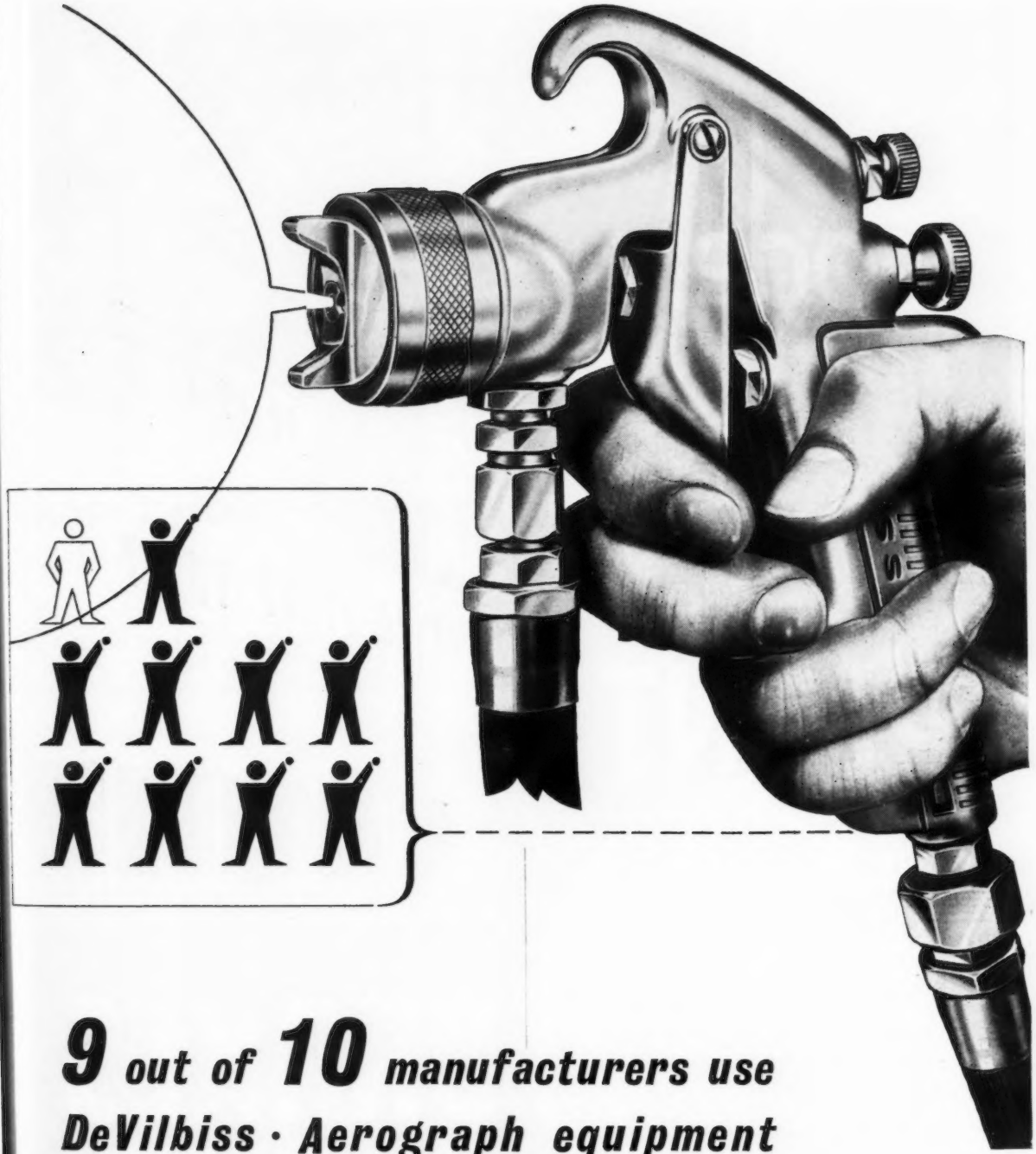

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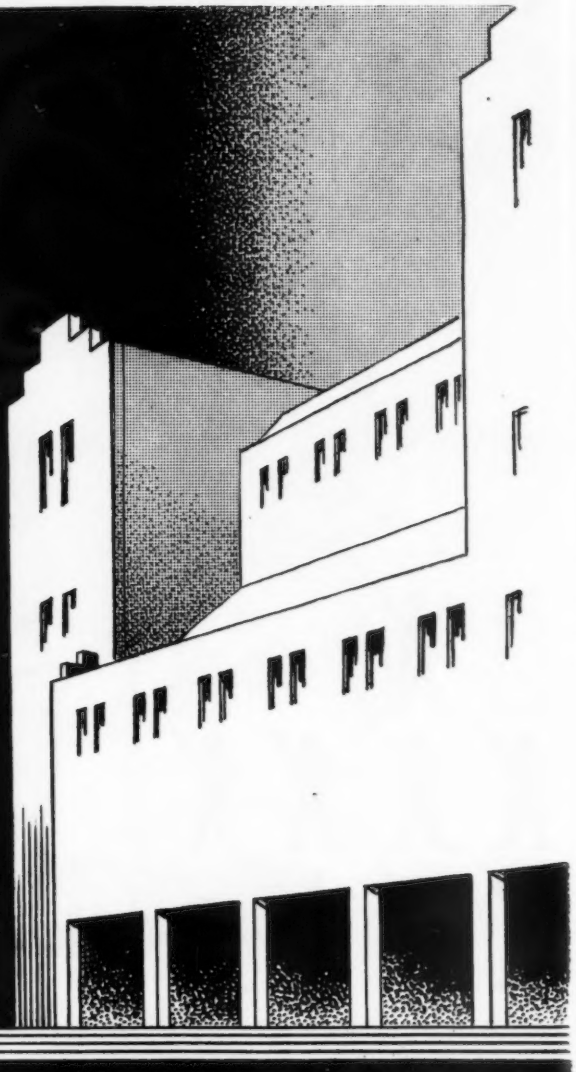

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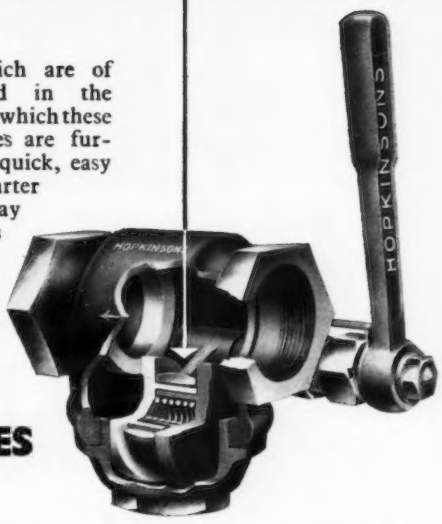

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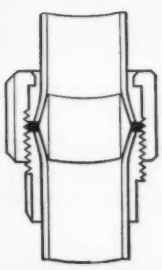

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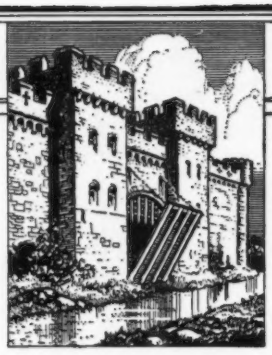

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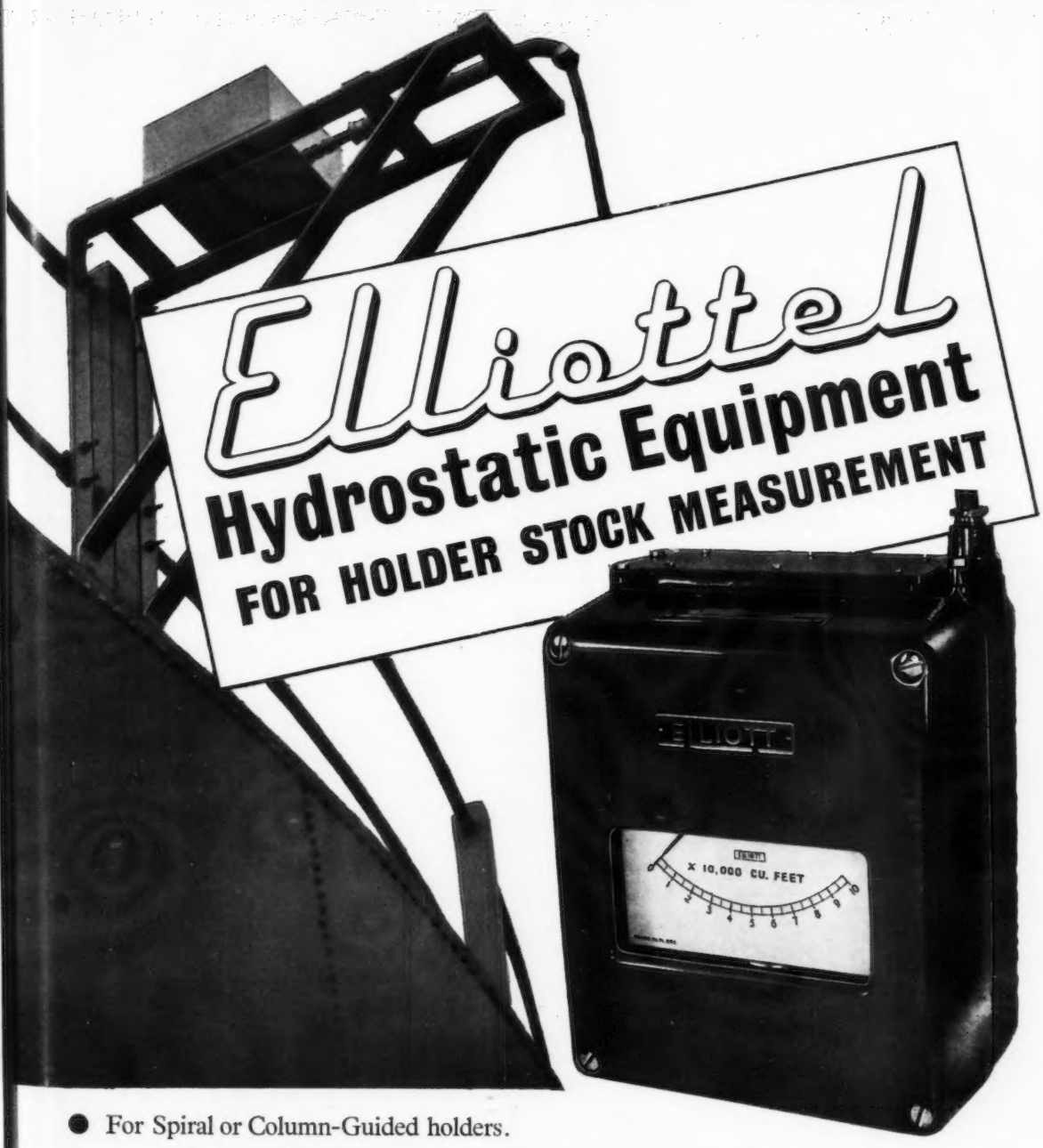

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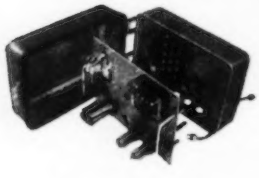

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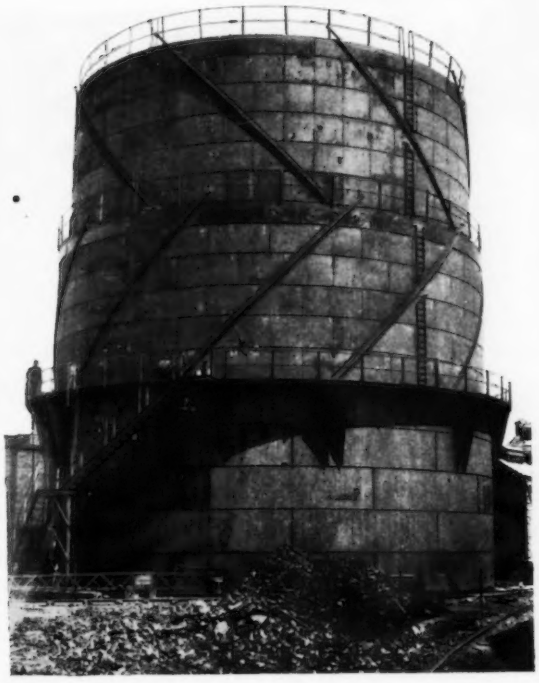

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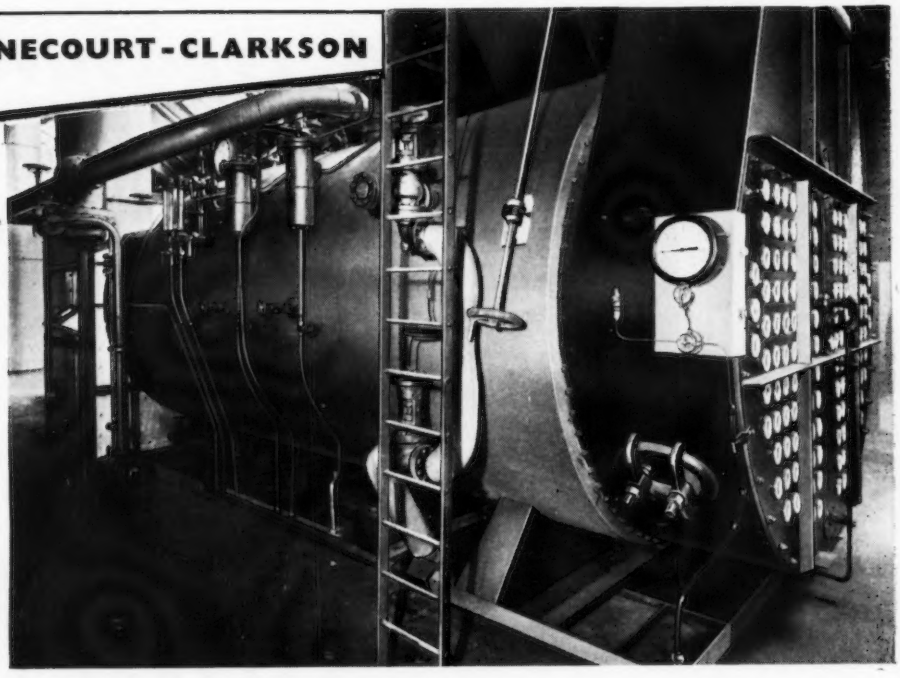

The illustration shows one of the Spencer-Bonecourt waste-heat boilers at Stoke-on-Trent Gas Works. Similar units are installed on all the Glover-West Continuous Vertical carbonising plant in this works.

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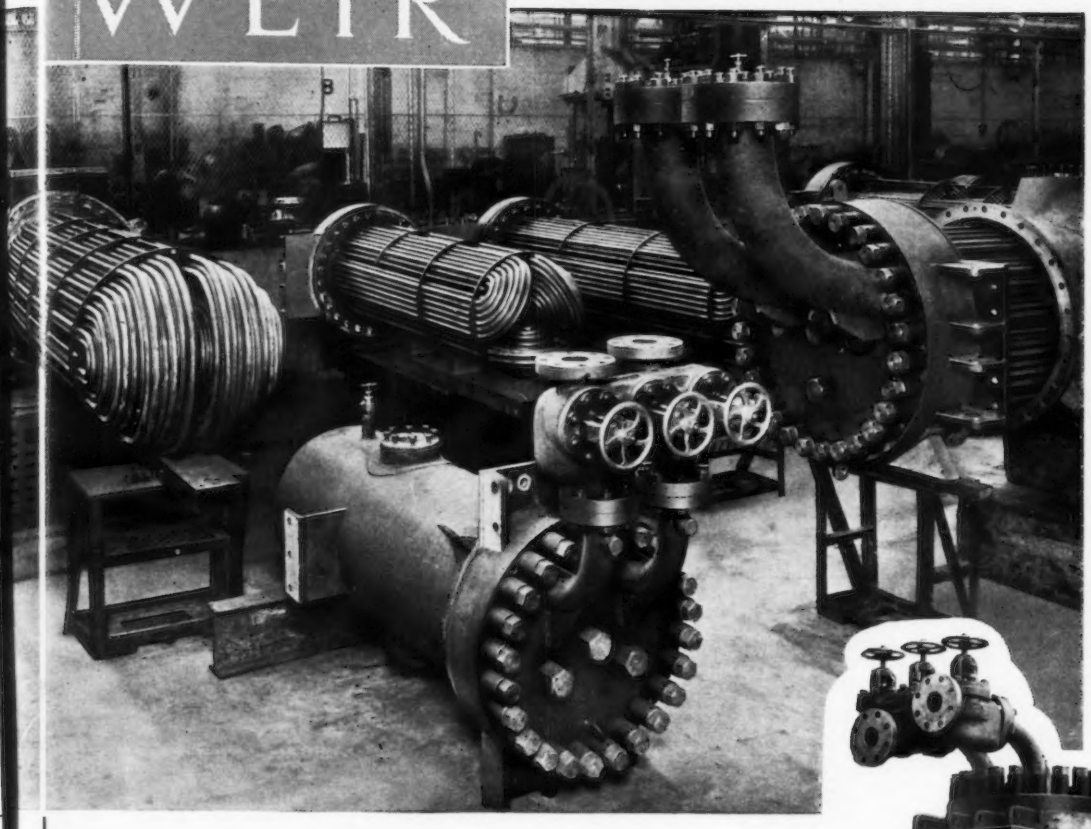

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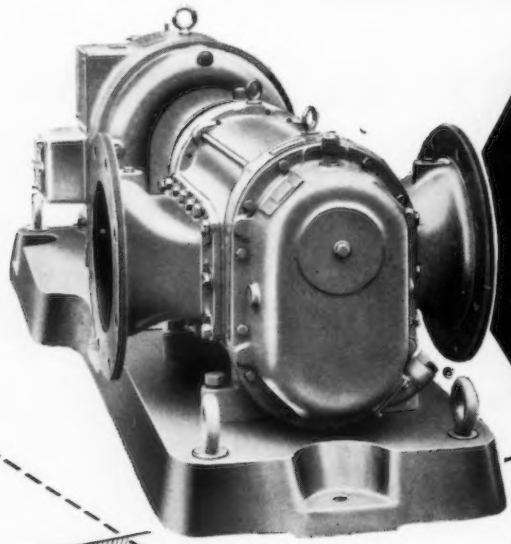

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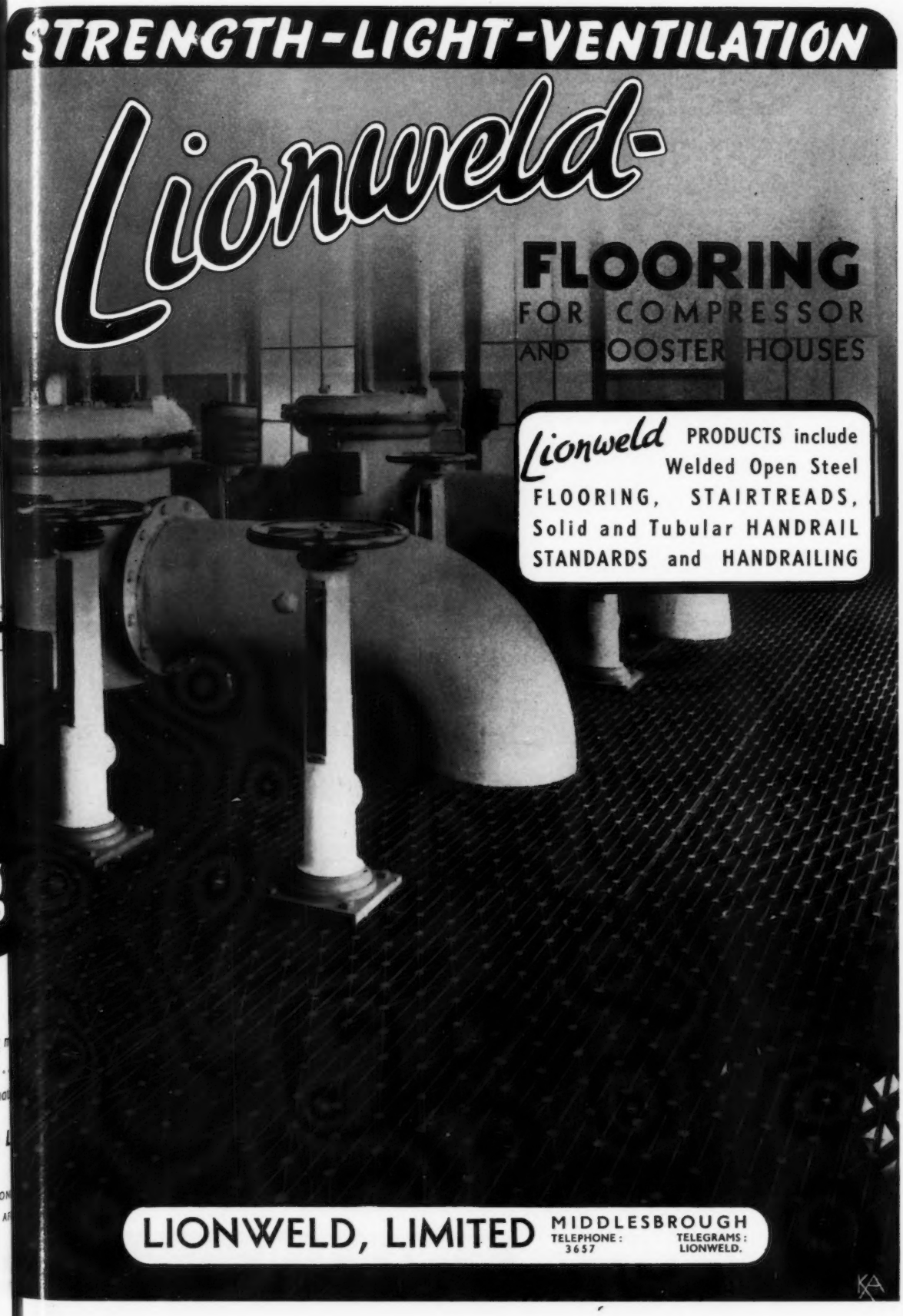
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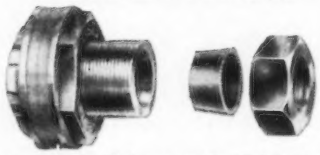

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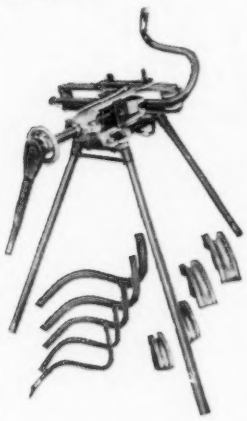

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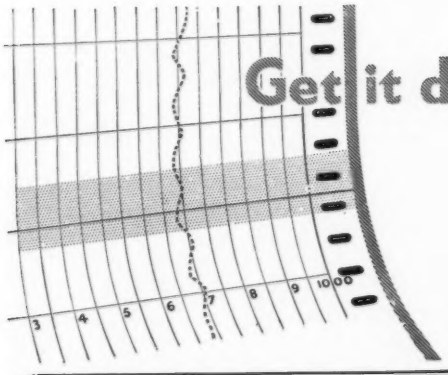

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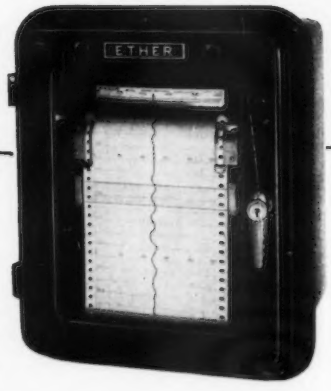

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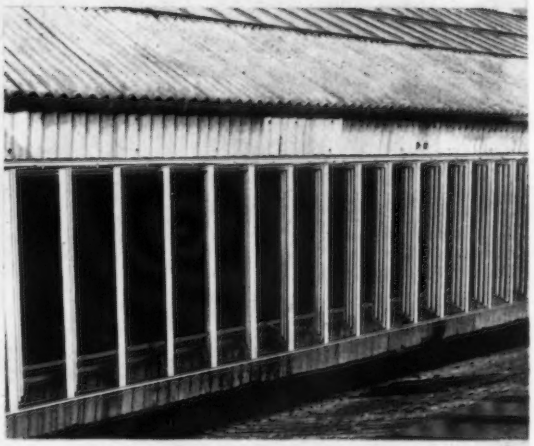

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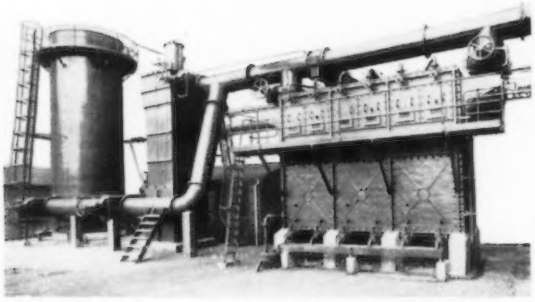
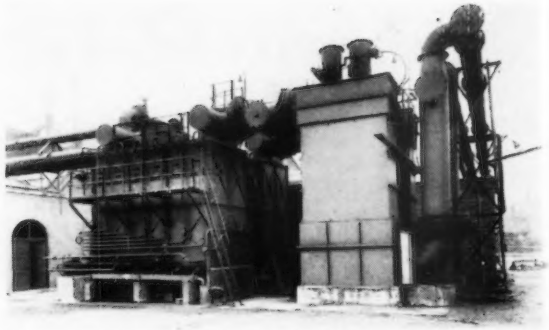


Wet purification plant comprising mild steel condenser, cast iron ammonia washer and plate-type electro-detarrer at Norwich for Eastern Gas Board.



Washers and detarrers at New Wortley for North Eastern Gas Board.

Effluent liquor treatment plant for Southern Gas Board.

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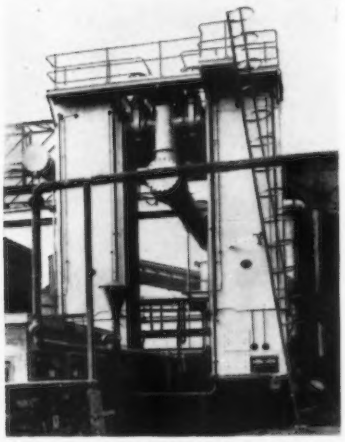
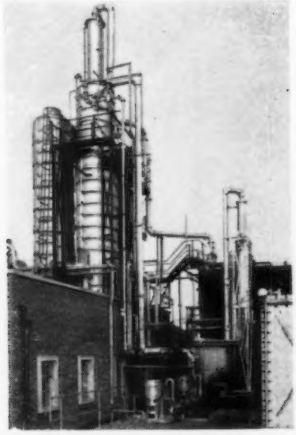


Mild steel vertical water-tube condensers at Bristol (Canon's Marsh Gasworks) for the South Western Gas Board.



Concentrated ammonia liquor plant at Bristol for South Western Gas Board.

Tube-type electro-detarrer at Oldham for North Western Gas Board.

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INDEX TO 'JOURNAL' ADVERTISERS

	PAGE
A	
A.C.E. Machinery, Ltd.	
Abbott, Birks & Co., Ltd.	
Acme Wringers, Ltd.	
Aerogen Co., Ltd.	
Aerograph Co., Ltd.	249
Air Control Installations, Ltd.	
Alder & Mackay, Ltd.	
Aldridge & Ranken, Ltd.	247
Allan Taylor (Engineers), Ltd.	
Allen, John, & Son (Oxford), Ltd.	228
Ascot Gas Water Heaters, Ltd.	
Ascot Gas Water Heaters, Ltd. (F. A. Neat) ...	
Ashmore, Benson, Pease & Co.	236
Ashworth & Parker, Ltd.	
Aspinall's (Paints), Ltd.	
Associated Lead Manufacturers, Ltd.	
Atlas Preservative Co., Ltd.	
Audley Engineering Co., Ltd.	
Automatic Telephone & Electric Co., Ltd. ...	
Automotive Products, Ltd.	
B	
Bale & Church, Ltd.	297
Balfour, Henry, & Co., Ltd.	
Bayley, Thos., (Great Bridge), Ltd.	296
Begnaco Meters, Ltd.	
Benham & Sons, Ltd.	
Birtley Co., Ltd.	
Blakeley Firth, Sons & Co., Ltd.	
Booth, John, & Sons (Bolton), Ltd.	
Bratt Colbran, Ltd.	
Bray, George, & Co., Ltd.	242
Bray, W. E., & Co., Ltd.	
British Gas Purifying Materials Co.	
British Jeffrey-Diamond, Ltd.	
British Oxygen Co., Ltd.	
British Paints, Ltd.	232
British Rototherm Co., Ltd.	
British Thermostat Co., Ltd.	
British Thomson Houston, Ltd.	
British Tyre & Rubber Co., Ltd.	
British Vacuum Cleaner & Engineering Co., Ltd.	
Broadbent, Thomas, & Sons, Ltd.	
Broom & Wade, Ltd.	
Brown, J., & Co., Ltd.	296
Bugden, Thos., & Co.	
Bulmers (Calculators), Ltd.	
C	
Cambridge Instrument Co., Ltd.	
Cannon (G. A.), Ltd.	
Cathodic Corrosion Control, Ltd.	256
Cementation Co., Ltd.	238
Chemical Engineering Wiltons, Ltd.	
Cinema-Television, Ltd.	
Clapham Bros., Ltd.	
Clayton, Son & Co., Ltd.	232
Clifford Engineering Co., Ltd.	
Cochrane (Middlesbro') Foundry, Ltd.	
Cohen, George, Sons & Co., Ltd.	237
Concrete Proofing Co., Ltd.	
Consett Iron Co., Ltd.	226
Cort, Robert, & Son, Ltd.	
Crane, Ltd.	
Crone & Taylor, Ltd.	240
Crosby & Co., Ltd.	
Crossley Bros.	
Crowley Russell & Co., Ltd.	243
Curtis, A. L., & Co.	
Cutler, Samuel, & Sons, Ltd.	
Cuxson, Gerrard & Co., Ltd.	
D	
Davenport Engineering Co., Ltd.	
Davey, Paxman & Co., Ltd.	
De la Rue, Thomas, & Co., Ltd. (Gas Group) ...	
Demolition & Construction Co., Ltd.	
Dempster, R. & J., Ltd.	225
Dempster, Robert, & Sons, Ltd.	282
Denison & Son, Ltd.	248
Derbyshire Silica Firebrick Co., Ltd.	
Diaphragm & General Leather Co., Ltd. ...	
Dick, R. & J., Ltd.	
Donkin (The Bryan) Co., Ltd.	Cover II
Douglas, Wm., & Sons, Ltd.	
Drakes, Ltd.	250
Dresser Manufactures (England), Ltd.	
Drew, H. B., Ltd.	258
Drummond Patents, Ltd.	238
E	
E.B. Refractory Cement Co., Ltd.	
Eimco (Great Britain) Ltd.	
Elcontrol, Ltd.	254
Electroflo Meters Co., Ltd.	
Electrolux, Ltd.	227
Ellison, Geo., Ltd.	
Elliott Bros. (London), Ltd.	253
Erskine, Heap & Co., Ltd.	
Essard, Ltd.	258
Essex Partners, Ltd.	260
Ether, Ltd.	260
Everard & Co., Ltd.	
Ewart & Sons, Ltd.	
Ewart Chainbelt Co., Ltd.	
F	
Fisher & Ludlow, Ltd.	
Fisher Governor Co., Ltd.	
Flaval, S., & Co., Ltd.	
Fluidrive Engineering Co., Ltd.	235
Fowler, John, & Co. (Leeds), Ltd.	
Franki Compressed Pile Co., Ltd.	231
Franklin Furnace Co., Ltd.	
G	
Gas Purification, Ltd.	297
General Descaling Co., Ltd.	
General Electric Co., Ltd.	
General Gas Appliances, Ltd.	
Gibbons Bros., Ltd.	239
Gibbons Heurtey, Ltd.	
Girdex Engineering Co., Ltd.	
Glover, George, & Co., Ltd.	
Glover, Thomas, & Co., Ltd.	266
Godfrey, Sir George, & Partners (Industrial), ...	258
Goodall Clayton & Co., Ltd.	256
Goodyear Industrial Rubber Products, Ltd. ...	289
Grant, Lyon, & Co., Ltd.	
Graphite Products, Ltd.	296
Green & Boulding, Ltd.	298
Gunite Construction Co., Ltd.	252
H	
Hamilton, A. H., & Co., Ltd.	252
Hardman & Holden, Ltd.	
Harris & Pearson, Ltd.	296
Harrisons (London), Ltd.	298
Harvey, G. A. & Co. (London), Ltd.	
Hattersley & Davidson	
Hawkins, W. T., & Co.	296
Hayward, E., & Co., Ltd.	
Hayward, Tyler & Co., Ltd.	241
Hick Hargreaves & Co., Ltd.	
Hilmor, Ltd.	260
Hills (West Bromwich), Ltd.	261
Holmes, W. C., & Co., Ltd.	299
Honeywell Brown, Ltd.	
Hopkinsons, Ltd.	251
Horseley Bridge & Thomas Piggott, Ltd. ...	
Horstmann Gear Co., Ltd.	
Howden, James, & Co., Ltd. ... .. facing p.	284
Hudswell, Clark & Co., Ltd.	
Humphreys & Glasgow, Ltd.	264
Hyde, Silas, Ltd.	
I	
Ideal Boilers & Radiators, Ltd.	
I.C.I., Ltd. (Fyffes Fittings)	
I.C.I., Ltd. (Metals Division)	234
Inertol, Ltd.	
Infra Red Development Co., Ltd.	
Ingham, John, & Sons, Ltd.	247
J	
Jeavons, E. E., & Co., Ltd.	
Jeavons Engineering Co.	
Jenkins, W. J., & Co., Ltd.	
Johnson, C. H., (Machinery), Ltd.	
K	
Keay, E. C. & J., Ltd.	228
Keelavite Rotary Pumps & Motors, Ltd. ...	
Keith Blackman, Ltd.	300
Kings Patent Agency, Ltd.	
King, Walter, Ltd. 296,	297, 298
Kirkham Hulett & Chandler, Ltd.	252
L	
Lafarge Aluminous Cement Co., Ltd.	229
Laidlaw, R., & Son (Edin.), Ltd.	
Lamont, James H., & Co., Ltd.	251
Land & Marine Contractors, Ltd.	
Le Bas Tube Co., Ltd.	
Leeds Fireclay Co., Ltd.	
Lee, Howl & Co., Ltd.	
Lincoln Electric Co., Ltd.	
Lindsay, Henry, Ltd.	
Lionweld, Ltd.	259
Lind, Peter, Ltd.	
M	
MacLellan, George & Co., Ltd.	248
Mackay Industrial Equipment, Ltd.	
Macpherson, Donald, & Co., Ltd.	
Magnetic Valve Co., Ltd.	
Main, R. & A., Ltd.	
Mapel Metal & Pipeline Endurance, Ltd ...	
Matterson, Ltd.	
McNeill, F. & Co., Ltd.	
Mechanical Handling	
Mechans, Ltd.	255
Meltham Silica Fire Brick Co., Ltd.	
Messengers & Sons (Birmingham) Ltd.	
Meters Ltd.	
Metropolitan Gas Meters, Ltd.	Cover IV
Metropolitan Vickers Electrical Co., Ltd. ...	246
Midland Iron & Hardware Co. (Cradley Heath), Ltd.	
Milne (Edinburgh) Ltd.	
Mint, Birmingham, Ltd.	
Mitchell Engineering, Ltd.	
Mitchell, H., & Co.	
Monitor Engineering & Oil Appliances, Ltd. ...	
Monk, A., & Co., Ltd.	
Murex Welding Processes Ltd.	
N	
National Benzole Co., Ltd.	
National Cash Register Co., Ltd.	
National Enamels, Ltd.	
New Conveyor Co., Ltd.	
Newton Chambers & Co., Ltd.	
Northern Manufacturing Co., Ltd.	
Norwest Construction Co., Ltd.	
Nu-Swift, Ltd.	297
O	
Oxley Engineering Co., Ltd.	
P	
Parkinson & Cowan (Gas Meters), Ltd. ...	Cover I
Parkinson Stove Co., Ltd.	
Pass, E., & Co., Ltd.	
Peart, E., & Co., Ltd.	
Peebles & Co., Ltd.	
Perl Controls, Ltd.	
Plenty & Son, Ltd.	
Pointer, Harry (Norwich) Ltd.	256
Power-Gas Corporation, Ltd.	236
Press, William, & Son, Ltd.	
Pulsometer Engineering Co., Ltd.	
Pyrene Co., Ltd.	265
R	
Radiant Heating, Ltd.	
Radiation, Ltd.	280, 281
Rawlplug Co., Ltd.	
Reavell & Co., Ltd.	296
Roberts, R. E., & Sons, Ltd.	
Robinson, J. H., & Co. (Liverpool), Ltd. ...	
Royston, Geo., & Sons, Ltd.	290
Rozalex, Ltd.	
Russell, R., & Sons	
S	
Salter, T. E., Ltd.	
Sawyer, Geo. E., Ltd.	
Senior Economisers, Ltd.	
Siebe Gorman & Co., Ltd.	
Sieber, Jas., Equipment Co., Ltd.	
Siemens-Schuckert (Great Britain), Ltd. ...	245
Sigma Instrument Co., Ltd.	
Silvertown Rubber Company Ltd	
Simm, G. E. (Engineering) Ltd.	
Simon Engineering (Midlands), Ltd.	
Simon-Carves, Ltd.	262
Simon, Richard, & Sons, Ltd.	
Sisson, W., & Co., Ltd.	
Smith Meters, Ltd.	
Smith, Thos., & Sons (Rodley), Ltd.	
Spencer Bonecourt, Ltd.	255
Sperryn & Co., Ltd.	
Stanton Ironworks Co., Ltd.	
Staveley Iron & Chemical Co., Ltd.	
Steels Engineering Installations, Ltd.	
Stein, John G., & Co., Ltd.	295
Stelcon (Industrial Floors), Ltd.	
Stewart & Gray, Ltd.	
Stewarts & Lloyds, Ltd. ... . facing p.	285
Stillite Products, Ltd.	
Stothert & Pitt, Ltd.	
Stoves, Ltd.	
Strachan & Henshaw, Ltd.	
Stringer Bros.	
Sugg, Wm., & Co., Ltd.	
Supra Chemicals & Paints, Ltd.	
Sutcliffe Speakman & Co., Ltd.	
Sutherland, A. G., Ltd.	
T	
T & T Works, Ltd.	242
Tangyes, Ltd.	
Terry, Herbert & Sons, Ltd	
Thompson, Edward, Ltd.	
Thorp, Thomas, & Co., Ltd.	
Tully Engineering Co., Ltd.	
Turners Asbestos Cement Co., Ltd.	
U	
Underpressure Engineering Co., Ltd.	296
United Kingdom Construction & Eng. Co., Ltd.	
Unit Superheater & Pipe Co., Ltd	
V	
Vaughan, Edgar, & Co., Ltd.	
Victaulic Co., Ltd.	233
Visco Engineering Co., Ltd.	254
Vulcan Stove Co., Ltd.	
W	
Wade Couplings, Ltd.	
Wailes Dove Bitumastic Ltd.	
Wakelin, F. H., Ltd.	
Walker Bros., Ltd.	
Walker, C. & W., Ltd.	
Walker, Crosweller & Co., Ltd.	244
Walker, Wm., & Sons (Hanley), Ltd.	
Waller, George, & Sons, Ltd.	
Walter King, Ltd. 296,	297, 298
Ward, Thos. W., Ltd.	
Warsop Power Tools, Ltd.	
Weir, G. & J., Ltd.	257
Wellington Tube Works, Ltd.	
Wellman Smith Owen Engineering Corpn., Ltd.	
West's Gas Improvement Co., Ltd. ...	Cover III
West's Piling & Construction Co.	
Westwood & Wrights, Ltd.	
Whessoe, Ltd.	
Whitley Moran & Co., Ltd.	
Widnes Foundry and Engineering Co. Ltd. ...	
Wilkes, A. H., & Co., Ltd.	
Willey & Co., Ltd.	
Williams, John E., Ltd.	295
Williamson, Cliff, Ltd.	
Wilson, George, Gas Meters, Ltd.	
Winn & Coales, Ltd.	
Woodall-Duckham Construction Co., Ltd. ...	279
Wood, Hugh, & Co., Ltd.	230
Wormald Patent Locks Co., Ltd.	
Y	
Yorkshire Copper Works, Ltd.	
Agencies	
Appointments Vacant	298
Appointments Wanted	
Contracts Open	
Educational	
Fellowship	
Miscellaneous	
Patents	
Plant For Sale	
Publications	

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108TH YEAR

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Published by Walter King Limited,
11, Bolt Court, Fleet St., London, E.C.4

Telephone: FLEet Street 2236-7 Telegrams: Gasking, Fleet

CONTENTS

EDITORIAL COMMENT

Nationalisation and the Budget 267
Fuel Saving Incentive 268

SPECIAL ARTICLE

Continuous Tar Distillation 277
The Pay Packet (Or Cheque) and the Cold War. From our Labour Relations Correspondent 283

NEWS OF CURRENT EVENTS

Personal 269
Obituary 269
Gas Coke Prices Up 270
Scottish Gas Prices Up 270
London Gas Explosion 270
World Power Contingent Named 270
Primitiva Company Declares No Dividend Again 271
Aberdeen Gasholder Nearly Ready 271
Belfast Committee Wants Overdraft of £600,000 271
George Waller '25 Club' 271
M.P. to Receive Council Protest 271
Olympic Training Fund 271
In Parliament 272
News in Brief 272
North Western Board's Area Conference 273
Diary 276
Trade News 293

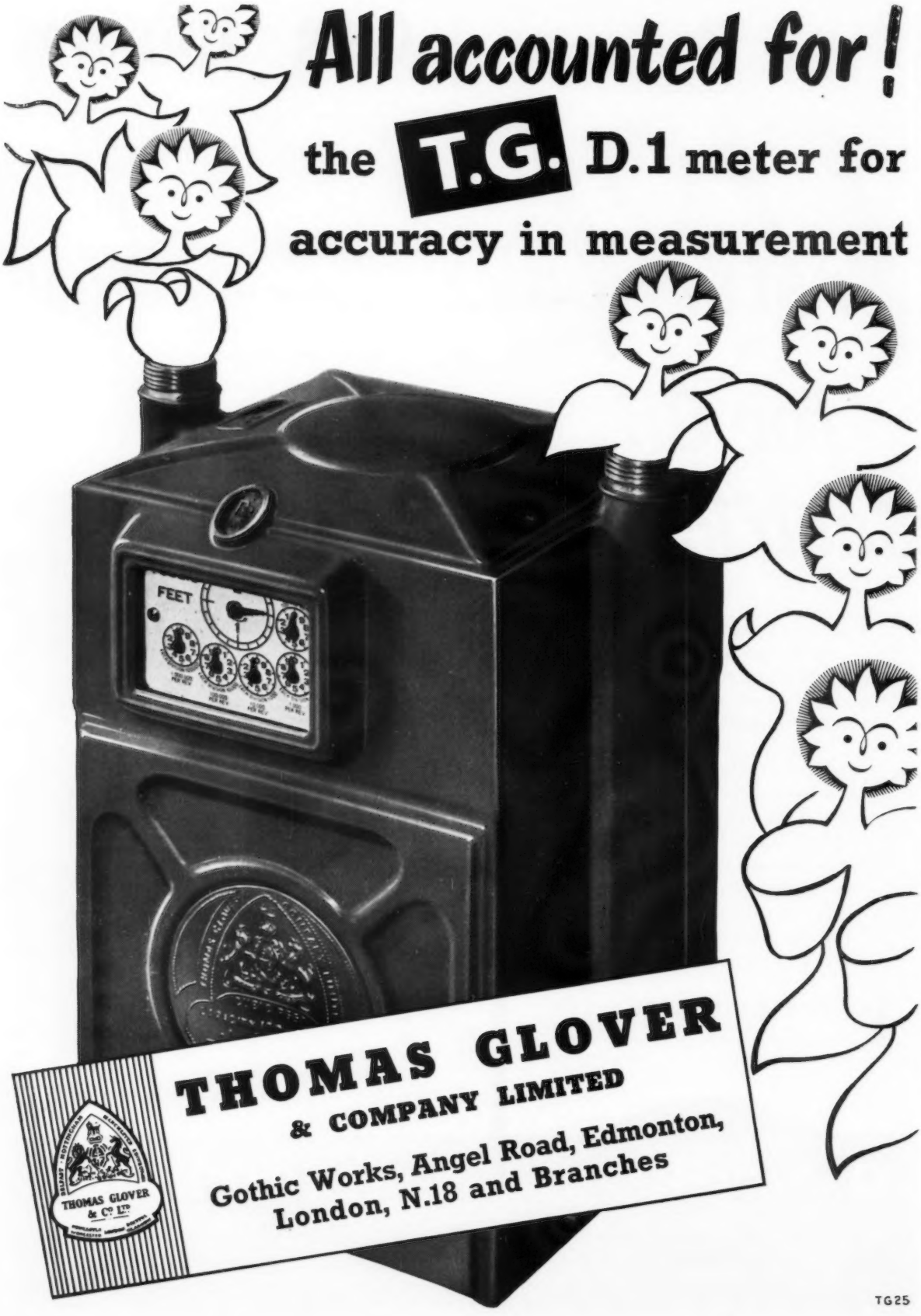
TECHNICAL RECORD

Joint Consultation. By W. B. Harrison 274
Safety is No Accident. By H. G. Hall 275
Coke Symposium Discussed Anew. South Western Section's Open Meeting at Bristol 285

PUBLISHERS' NOTICE, SEE PAGE 297

All accounted for!

the T.G. D.1 meter for accuracy in measurement



THOMAS GLOVER
& COMPANY LIMITED

Gothic Works, Angel Road, Edmonton,
London, N.18 and Branches

TG25

Gas Journal

VOLUME 286. No. 4841. APRIL 25, 1956. 108th YEAR

Nationalisation and the Budget

MR. Harold Macmillan's 'Savings Budget,' presented last week, has had the odd effect of providing almost as little food for the Conservatives as ammunition for the Socialists. Having a quality of austerity unequalled since the days of Sir Stafford Cripps, the new Chancellor has budgeted for the largest ordinary surplus since 1950/51 and would have had a small overall surplus as well had he not brought the nationalised industries into the capital side of the account. It is this aspect of the Budget which deserves particular comment. Let us remind ourselves of Mr. Macmillan's words.

Pointing out that in the past more attention has been given to the managerial side of nationalisation than to the financial side, the Chancellor went on to emphasize the very large sums which it has been necessary to raise in the case of gas and electricity for rapid expansion of production and distribution. Of the total capital expenditure in coal, gas, electricity, transport and airways since the nationalisation of these industries, over £1,600 mill., or about 60% has had to come from external borrowing. Before nationalisation these services were financed largely by money raised on the borrower's own credit; now the new institutions pledge the credit of the nation. 'Perhaps this is right . . . perhaps, like the pelican, traditional symbol of maternal devotion, the State should feed its off-spring with its own blood,' said the Chancellor, but added that 'from the point of view of national credit, it's a considerable inconvenience.'

A number of institutions, such as local authorities, have been in the habit of borrowing from the State—that is, from the Exchequer—but since their own credit allows them to borrow from the market without any Treasury underwriting, there is no reason why they should not do this more and more. Mr. Macmillan said that he would 'press forward' with this policy and thought that the ultimate aim must be that the nationalised industries should be able to do the same. Referring to the suggestion made by the Herbert Committee in relation to the Central Electricity Authority, Mr. Macmillan said: 'The time may come when this could happen. Perhaps electricity and gas might be pioneers.' But, he continued, neither industry (nor coal nor railways) have 'a cat in hell's chance in present conditions' partly because as the Nationalisation Acts are drawn, the industries cannot pledge their undertakings as security and are not left with an unfettered ability to fix charges, and partly because the very size of their requirements adds to the difficulty of flotation on their own credit.

At present, apart from coal, the capital required is raised ultimately from the market investor, as and when the market completely absorbs these issues. Generally the borrowing starts with bank advances and from time to time these are followed by issues of stock carrying a Treasury Guarantee. But if these are not taken up, or not fully taken up, they have to be supported by the Exchequer. 'In recent months,' commented the Chancellor, 'support of this nature has had to be substantial and prolonged.'

It is clear that if the nationalised industries are to carry on their programmes, further large issues will soon be necessary, doubtless with similar consequences. As Mr. Macmillan said: 'Two embarrassing results will follow: First, official "support" . . . can in fact only be given, by and large, by borrowing the necessary funds on Treasury Bills. This impedes the operation of our monetary control. It kicks the ball, as one might say, through one's own goal. Secondly, the necessity of making frequent issues on the basis of Government Credit, often at inconvenient times, for particular nationalised industries which have reached their borrow-

ing limits with the banks, prejudices the national programme of borrowing, re-financing and funding.'

Mr. Macmillan's solution, which he called 'facing reality,' is for the Exchequer to be in control of the whole operation and he proposes, as a temporary measure, to meet these capital requirements out of the Exchequer. Bank advances for capital expenditure will gradually be repaid. 'These industries will in future look to the banks only for their normal requirements of short-term capital.' The Chancellor proposes to move a Procedure Resolution in order that Parliament may embody the necessary provisions in the Finance Bill. The new system will only be for two years and the maximum sum will be for £700 mill.; the Chancellor emphasized that this is for the industries other than coal, which is already financed by the Exchequer below the line. If these proposals are accepted it is estimated that issues may be required of some £350 mill. in 1956-57, and this figure must be added to the estimate of the nominal deficit below the line. 'So disappears, by my own murderous act, my beautiful overall balance!' wryly commented Mr. Macmillan.

However, he is confident that this plan to bring the nationalised industries under the Treasury umbrella will give the Government far more control of the situation. It makes no difference to the method by which the physical programmes of the various boards are approved by the departments concerned and the Treasury. The Chancellor put it this way: 'If you actually press the fee yourself into the piper's hand, you have a better chance of influencing the tune.' His purpose is that this sum for the nationalised industries, with other borrowing by the Government, should be successfully absorbed by the public during the year—that is, draw in real savings and not depend on inflationary finance. 'But,' said Mr. Macmillan, 'in the end, neither the nationalised industries nor the Government can borrow, except upon a purely inflationary basis, more than the nation is able and willing to save.'

The new scheme, which short-circuits the Government subscribing substantial sums to the stock issues of these industries and subsequently reimbursing itself by disposing of the securities in the open market, and permits the Treasury to provide the industries with money in a steady flow and reimburse itself by periodic issues of Government stock, has several advantages. It will relieve the industries of the anxiety of choosing the right moment to issue their stocks and it enables the Government to borrow money on behalf of the nationalised industries when the time is propitious. And what is more, the scheme seems to have the approval of all parties, although it is wondered whether this change is intended as a prelude to a much closer scrutiny by the Government of capital issues by the nationalised industries.

Fuel Saving Incentive

There were two other sections of the Budget which were of particular interest to the gas industry. One was the Chancellor's proposal to restore the investment allowance for fuel-saving equipment, and the other was his determination to maintain credit restrictions 'for the time being.'

Exactly what constitutes 'approved fuel-saving equipment' on which investment allowances can be claimed will not be known until the Finance Bill is published. But if, as seems likely, it covers the same field as the Government Loans Scheme, introduced four years ago except that it will only apply to additions to existing plant. This means that it embraces replacement and conversion of boiler plant, structural insulation, installation of mechanical stokers, economizers, and back pressure schemes, coal to oil and gas to oil conversions, conversions from solid fuel to electricity and to pulverized fuel, and the installation of forced draught equipment, heat recovery devices, calorifiers, heat exchangers and induction generators.

However, it is worth pointing out that while the Loans Scheme now applies to non-industrial premises such as hotels and offices, Mr. Macmillan only referred to 'industrial premises' in his Budget. Applications for replacements come within the scheme if existing plant is not worn out 'provided substantial fuel savings can be made' and are judged on technical grounds by the National Industrial Fuel Efficiency Service. Thereafter they are referred to the Ministry which decides the extent of the loan to be provided. It is pleasing to note the Chancellor's opinion that this exception to the Government decision to suspend investment allowances has, in company with shipping and scientific research, 'an absolute priority.'

Of hire purchase Mr. Macmillan said that, as a result of steps by his predecessor and himself, there were now 'signs that the pressure of demand is easing a little.' However, the evidence for this is confined to one sector of the economy—the industries producing consumers' durable goods—which has been affected both by the new hire purchase regulations and by seasonal slackness. 'It is plain that for the time being credit restrictions must continue,' stated the Chancellor.

STANDARDS FOR APPLIANCES

WITH the publication of two further parts of B.S. 1250 practically all gas-burning appliances are now covered by up-to-date standards which ensure their safety and efficient use. The two latest standards are Part 5, dealing with refrigerators, and Part 6, concerning washing appliances.

The part of the standard dealing with refrigerators specifies detailed requirements, including performance and method of test for free-standing, built-in and wall-fixing appliances with either front or top access. Painted surfaces must be grease-resistant, the interior of the cabinet has to be quite airtight, for built-in models left- and right-handed doors shall be provided as alternatives, when the door is open the refrigerator must not tilt, and means shall be provided for controlling the inside temperature. These are but a few of the recommendations put forward to refrigerator makers.

Covered in Part 6 of B.S. 1250 are performance standards and methods of test for gas-heated wash boilers, washing machines, drying cabinets, built-in drying cupboards, airing-cupboard heaters, and irons. In wash boilers and washing machines, says the standard, there should be a draw-off tap, the outlet of which is at least 11 in. above the floor, unless the appliance is fitted with an emptying pump. The time required to draw off or pump out the contents when the pan is nearly full must not exceed six minutes. Wringers should be firm and the appliance must not wobble during wringing operations. Projections on the appliance which might damage clothing are to be avoided. All appliances should be provided with washing instructions.

Copies of the new parts of B.S. 1250 are obtainable from the Sales Department, British Standards Institution, 2, Park Street, W.1, price 3s. for Part 5 and 4s. for Part 6.

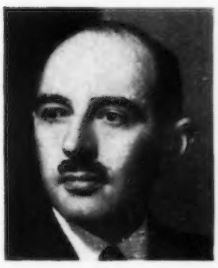
Personal Notes

MR. D. L. HILL, who will be taking up the appointment of Training and Education Officer to the Southern Gas Board from the beginning of June, is aged 38. He took his M.A. degree at Cambridge University (Magdalene College), where he also played ice hockey for the second University team. During the war he served with the R.N.V.R. in command of small ships, and was engaged on anti-E Boat patrols, coastal convoy and mine-sweeping, and was one of the navigational leaders for the Normandy invasion. Shortly after demobilization, he joined British European Airways, then in its infancy, as Staff Training Officer, and ultimately became Personnel Officer to Northolt Airport. He was appointed Assistant Industrial Relations Officer to the Gas Council in 1950, and at present holds, in addition, the following posts: Employers' Side Secretary to all the national joint councils and negotiating committees (excepting the Senior Gas Officers' Joint Council); Joint Secretary to the Advisory Committee on Education and Training to the Gas Council. He has served as joint secretary to the gas industry productivity team which visited the U.S.A. in 1952, and took an active part in the development of the Gas Council management courses since their inception by the Institution of Gas Engineers in 1953.

MR. C. C. CUNNOLD is to be Group Engineer, Group 2, North Thames Gas Board. This and the following North Thames appointments are as a result of the appointment of DR. A. E. HAFFNER as Chief Engineer to the Southern Gas Board, and that of MR. H. W. MOYS as Staff Controller to the North Thames Gas Board. They take effect from May 1: MR. K. C. MEAD is to be Station Engineer, Fulham (with the status of Group Engineer); MR. E. J. EDWARDS is to be Station Engineer, Nine Elms (with the status of Group Engineer); MR. A. F. GRANT is to be Station Engineer, Kensal Green; MR. B. W. DAWKINS is to be Station Engineer, Bow Common; MR. P. G. S. FRY is to be Station Engineer, Mill Hill; MR. W. J. K. WARE is to be Station Engineer, Hornsey; MR. T. BISPHAM is to be Deputy Station Engineer, Nine Elms; and MR. H. OLIVER is to be Senior Assistant Engineer, Bromley.

MR. H. WEIGHT, of Ascot Gas Water Heaters, Ltd., will be transferred from Belfast to Manchester on May 1 where he will assume the duties of Area Manager in the North Western Gas Board area. He will continue to be responsible for Ascot sales representation in Northern Ireland and the Republic of Ireland, both of which territories he will visit regularly. MR. T. FRASER will remain in Manchester as Mr. Weight's assistant. MR. F. C. HILLIER will be transferred from Manchester to London where he will be responsible for sales representation in the South Eastern Gas Board area in conjunction with MR. A. BENNETT.

MR. RICHARD STRINGER JOHNSON, M.B.E., Deputy Chairman of the South Eastern Gas Board, has been appointed Chairman of the East Midlands Gas Board in succession to Mr. Sydney Smith, who becomes Chairman of the Scottish Gas Board on May 1. Mr. Johnson has been associated with the gas industry for over 20 years, except for the period of the war. Born in 1907, he was educated at the Stationers' Company's School, London, and at Gonville and Caius College, Cambridge, where he read law. He was admitted a solicitor in 1930 and after a period in private practice joined the staff of the Gas Light and Coke Company in 1935. Mr. Johnson served with the Royal Artillery throughout the war and spent four years overseas—in the Middle East, Sicily and Italy—attaining the rank of lieutenant-colonel and being mentioned in dispatches. Soon after he rejoined the Gas Light and Coke Company in 1945 he was appointed Controller of Services and in 1949 on the establishment of the South Eastern Gas Board he became Deputy Chairman. Mr. Johnson is married and has two children.



MR. JOSEPH DUIGNAN, who was for 33 years Distribution Superintendent at the Kidderminster gas undertaking, has died aged 67. Mr. Duignan completed 50 years in the industry and worked at seven different undertakings. He commenced his career at Derby in 1903, and for four years received training as a fitter. In 1910, he was promoted to inspector at Hereford gasworks and two years later he was appointed outdoor superintendent and transferred to Pembroke Dock. In 1913, he went to Durham and stayed five years as a Distribution Superintendent. He then crossed the Irish Sea before taking up a position at Kidderminster in 1922 as Distribution Superintendent.

MR. F. L. WOODCOCK has been appointed Manager of the Electrolux London District following the death of Mr. H. S. Hadley. Mr. Woodcock joined Electrolux in 1938 and was at first engaged in the promotion of built-in refrigerators to the building trade. Since the war he has held various appointments at head office mainly concerned with the sales promotion of refrigerators.

MR. S. A. DANTON, Stroud Unit, South Western Gas Board, has been appointed Fuel Engineer, Kent County Council, Maidstone, Kent, as from May 1. Mr. Danton, who is a native of Kent, gained his technical qualifications after war service with the R.A.F.V.R. and he has previously held appointments with the South Eastern Gas Board.

Obituary

MR. COLIN ELLIS, of Shiphay, Torquay, has died, after a long illness. Mr. Ellis, who was 40, had been Chief Chemist at the Hollacombe Works of the South Western Gas Board for many years. He was a member of the Institution of Gas Engineers and the Institution of Fuel. He was known for the interest he displayed in the educational side of the gas industry, and up to the time of his last illness was a member of the teaching staff of the South Devon Technical College, Torquay.

MR. JOHN COWELL, Manager of the Newport District works, West Midlands Gas Board, has died at the early age of 51. Mr. Cowell went to Newport from Darwen, Lancashire, in 1943, on his appointment as foreman at the local gasworks. He had been connected with the gas industry for many years. He was eventually appointed Works Manager at Newport and remained in that capacity until nationalisation when he was appointed Manager at Market Drayton.

MR. SAMUEL CAWTHORNE, Chairman of Directors, Clayton, Son and Co., Ltd., has died at Churwell, Leeds. Mr. Cawthorne commenced his service with the Company in 1903 as a clerk, and was later appointed Secretary. He joined the Board in 1940 and was elected Chairman of the Directors on the death of Mr. R. G. Thomson in 1952. He is now succeeded as Chairman of Directors by Mr. Leonard Hartley, who is also Managing Director.

DAVID NEIL IMRIE ROBB, of Clyde Avenue, Bothwell, has died at the age of 85. Mr. Robb will be remembered by older members in the industry as a former Gas Manager at Hamilton and as a prominent member of the gas industry in his day. He had been retired for a considerable number of years.

MR. JAMES MCBAIN, formerly a Halifax Gasworks Superintendent and Mechanical Superintendent for 24 years has died aged 69. He was an Associate Member of the Institution of Gas Engineers and a member of the Institution of Marine Engineers.

MR. CHARLES HAIGH, who for 53 years had served the firm of Robert Dempster and Sons Ltd., gas engineers of Elland, has died. As a Fitter Director on construction of gas plants he had travelled extensively both at home and abroad. He was 79.

MR. ALBERT S. BROOK, who died at his son's residence in Birmingham, aged 85, was Manager of Lisburn gasworks from 1912 until his retirement in 1942. Mr. Brook, a Yorkshire man, was Manager of the gasworks at Chard, Somerset, before going to Lisburn.

MR. GEORGE JAMES GREENWOOD, who retired in 1948, after 37 years' service at Oxford gasworks, has died aged 72. Joining the Oxford Gas Company in 1911 he was a retort house stoker during most of his employment.

GAS COKE PRICES UP

Schedule of Increases Board by Board

CONSEQUENT upon the 5% increase in rail freight charges and because of increased distribution costs, gas coke prices will be increased throughout the country as from April 23, as shown in the following schedule. The necessary amendments to maximum retail prices under the Retail Coal Prices Order, 1941, will be made as from that date.

	Per ton	
	Ex works	Retail delivered (bagged)
Northern Gas Board	10d.	2s. 7d.
North Western Gas Board	1s. 8d.	3s. 5d.
North Eastern Gas Board	1s. 3d.	3s. 11d.
East Midlands Gas Board	1s. 8d.	4s. 2d.
West Midlands Gas Board	10d.	3s. 4d.
Eastern Gas Board	3s. 4d.	5s. 0d.
North Thames Gas Board	2s. 0d.	3s. 8d.
South Eastern Gas Board	2s. 0d.	3s. 8d. to 4s. 6d.
Southern Gas Board	2s. 6d.	5s. 0d.
South Western Gas Board	3s. 4d.	5s. 10d.
Scottish Gas Board:		
Counties of Kincardine, Aberdeen, (except Aberdeen City), Inverness, and all counties North thereof	1s. 8d.	4s. 0d.*
City of Aberdeen	1s. 8d.	4s. 3d.*
Counties of Renfrew, Lanark, Dumbarton, and the Cities of Edinburgh, Glasgow and Dundee	10d.	3s. 5d.*
Remainder of Scotland	1s. 8d.	3s. 2d.*
Wales Gas Board	1s. 8d.	1s. 8d.*

* Plus actual increase on coke railed outwards.

1⅛d. PER THERM ON PRICES IN SCOTLAND

'Because of Increased Wages'

THE price of gas in Scotland is to be increased by an average of about 1⅛d. per therm, it was announced on April 20 by the Scottish Gas Board. The rise is caused primarily by recent increases in salaries and wages which involve an additional expenditure of £500,000 for 1956-57.

The increase will be as follows: 1½d. a therm on the first block consumer; 1d. a therm on the second block (consumption of more than 27 therms a quarter up to 627 therms); and ½d. a therm on all remaining blocks.

In Edinburgh, Sir Andrew Clow, Chairman of the Board, said that apart from the additional expenditure in wages and salaries there was an estimated increase in transport charges of £55,000 as the result of recent changes. Had these increased costs not been imposed the present estimate for 1956-57 would have been almost level; with them, it was estimated that an additional £600,000 was necessary to balance the year's accounts. This estimate, in turn, was based on the prices of coal remaining at the present level.

The increase imposed, if it operated for the whole year, might yield about £950,000, but it would not apply for much more than nine months and could not be expected to bring more than £750,000. Any surplus would be required to help work off the expected deficit for last year's working.

Exceptional weather, which contributed to reduced consumption, had had an adverse effect on last year's accounts. On present estimates, the increase now imposed would provide no reserve. Sir Andrew Clow said that the new increase would mean an additional 3s. 4d. a quarter on the bill of the average householder. At vesting date in 1949 the price of a therm in Glasgow and Edinburgh was 13.89d. per therm and 13s. respectively; the present price—taking no account of the latest increase—was 22s. and 20d. a therm respectively. The increases will take effect after the next meter reading.

Gas Explosion Injures Eleven People

LONDON MISSION WRECKED

ELEVEN people were injured—four seriously—when escaping gas exploded in the basement of the Scripture Gift Mission, Eccleston Place, Victoria, on Monday afternoon. The building was wrecked.

Unconfirmed reports said gas had entered the boiler room and exploded. Fire broke out and destroyed Bibles and other books valued at £50,000.

Police cordoned off the area for fear of collapsing walls. Paving and coping stones had been flung into the air; windows over a large area were smashed.

The 'Gas Journal' understands that among the injured were a North Thames Gas Board fitter and a service layer engaged on a routine check of the premises.

Firemen managed to prevent the fire from spreading to a building nearby where large stocks of petrol were stored.

WORLD POWER CONTINGENT NAMED

GAS COUNCIL AND INSTITUTION REPRESENTED

SIR HAROLD HARTLEY is to represent the United Kingdom as an official delegate at the fifth World Power Conference, to be held in Vienna June 17-23. He is President of the World Power Conference.

Sir Harold Smith and Sir Henry Jones, Chairman and Deputy Chairman of the Gas Council, will also participate.

Three gas boards will be represented. Mr. T. Mervyn Jones, Chairman, Wales Gas Board, will be accompanied by Mr. E. M. Edwards, a member of the Board. Mr. G. le B. Diamond, C.B.E., Chairman, West Midlands Gas Board, and Mr. R. S. Johnson, Deputy Chairman, South Eastern Gas Board, will also attend.

The Secretary of the Institution of Gas Engineers, Dr. W. T. K. Braunholtz, O.B.E., will be present. So will Dr. N. Booth, General Manager (Research and Development), The British Oxygen Co. Ltd.; Mr. A. R. Chapman, General Sales Manager, Babcock & Wilcox Ltd.; Mr. H. Cheetham, Director, Woodall-Duckham, Construction Co., Ltd.; Mr. M. Sinclair Gaskill, Technical Director, West's Gas Improvement Co., Ltd.; Colonel W. R. Glover, Glover & Main Ltd.; Mr. G. Helps, Joint Managing Director, Humphreys & Glasgow Ltd.; Mr. G. W. Lee, Director of Research, British Coke Research Association; and Mr. E. West, Managing Director, West's Gas Improvement Co., Ltd.

PRIMITIVA COMPANY DECLARES NO DIVIDEND AGAIN

But 'Out-of-Court' Settlement is Discussed

BECAUSE of the expropriation of the assets of the Primitiva Gas Company of Buenos Aires, Limited, by the Argentine Government on March 5, 1945, the Company made a loss for the year ended December 31, 1955. This loss amounted to £6,079 compared with a loss of £5,893 for the preceding year. The loss has been offset by a transfer from general reserve. The directors are again unable to recommend the payment of a dividend on the ordinary shares.

The Argentine courts have not yet assessed the amount of compensation to be awarded to the Company for the expropriation of its assets in Buenos Aires. Arising from a decree-law issued by the provisional Government all further proceedings in this and similar lawsuits are suspended for six months from February 1, 1956.

The question of an Out-of-Court settlement of the Company's Expropriation claim is, however, now being discussed with the Argentine Authorities.

There are no developments in connection with the Company's claim against the municipality of the City of Buenos Aires for the recovery of excess profits alleged to have been earned by the Company under its former municipal contract.

Primitiva Holdings Ltd.

After providing for the net dividend upon its 6% redeemable cumulative preference stock, the Holdings Company's accounts show a deficit for the year ended December 31, 1955, of £3,452. This compares with a deficit of £3,285 for the previous year. The deficit for 1955 has been offset by a transfer from general reserve.

The Directors of Primitiva Holdings Ltd. have again confirmed their statement made in 1946 that the ordinary dividend paid in that year was the last which could be expected.

The annual general meeting of both the Primitiva Gas Company and Primitiva Holdings is to be held on June 19.

ABERDEEN GASHOLDER NEARLY READY

Increased Consumption

THE new gasholder at Tullos, Aberdeen—the first to be built in the city since 1892—is practically completed. Work is now going ahead on connecting it with the mains, and it is expected that the holder will be in operation by next winter. The capacity of the new holder, which is about 180 ft. high, is 3 mill. cu.ft. of gas.

It will supplement existing storage and increase supplies on the south side of the River Dee.

New gasmaking plant is also being installed at the gasworks and it, too will probably be in operation by next winter.

This work is being carried out to meet the steadily increasing gas consumption, which has risen by about 50% since just before the war.

Belfast Committee Wants Overdraft of £600,000

BELFAST Gas Committee has recommended that subject to a report from the Finance Committee, the City Council should apply to the Ministry of Health and Local Government for leave to borrow, by way of overdraft, £600,000 for five years from July 26 next.

The money is intended as working capital for the gas undertaking. Hitherto the sum has been provided by an overdraft of £150,000 sanctioned first by the Local Government Board in 1921, and by credits of £450,000 in the contingent fund.

The new application is necessary because of the increase in the undertaking's activities, reduction in the value of money, and depletion of the fund by the construction of plant which was nearing completion.

George Waller '25 Club' Kicks Off With 1,519 Years' Service

GEORGE WALLER & SON LTD., of the Phœnix Iron Works, Thrupp, is probably the oldest engineering concern in the Stroud Valleys. Many men have been employed there all their working lives, and their loyal service was acknowledged at a special gathering at Moor Court Hotel, Amberley, recently.

Waller's decided, a few months ago, to form a '25 Club' of all those who had worked for them for a quarter of a century or more. The years of service put in by the men who assembled for the dinner and presentation totalled 1,519 years—an average of 37 years each.

Every member of the new '25 Club' received a gold wristlet watch, suitably inscribed, as a memento of the occasion. The presentations were to have been made by Mr. Holmes, Chairman, but he insisted that Mr. Lewey, Director and Secretary, should carry them out. Mr. Lewey has 56 years' service. Mr. Holmes was appointed President and Honorary Member.

M.P. TO RECEIVE COUNCIL PROTEST

£100 'Present for Gas Board'

THE Scottish Gas Board's policy of collecting 10% profit from the price of gas cookers supplied to Largs Corporation's housing scheme is being objected to by Largs Town Council. Correspondence on the matter, together with a full report and a protest, is being sent to Sir Charles MacAndrew, the local M.P.

It was stated at a meeting of the Town Council that the Gas Board's policy meant that the Board secured 'a present of approximately £100' for 66 cookers for the new Glenacre development. The contracts with the Gas Board were for 66 wash boilers at £4 5s. 6d. each and 66 gas cookers at £15 8s. 0d. each.

The Burgh Surveyor stated that it had come to his knowledge that at least 10% of the price was taken by the Gas Board, and since, so far as the Gas Board were concerned, the transaction was purely clerical, he failed to see why the town should present the Gas Board with approximately £100. He had been negotiating with the Gas Board in an effort to have the prices reduced, but without success.

In the schedule, provision was made to the plumbing contractor of a percentage profit on the purchase price of the cookers and boilers for which the plumber was charging 8% and the anomaly arose in as much as the 8% was based on the price of the cookers which included a 10% profit for the Gas Board.

OLYMPIC TRAINING FUND

It will be remembered that Mr. W. R. Edgar recently took over the post of National Organizer of the Amateur Swimming Association's Olympic Training Fund. One object of the latter is to raise £5,000 to send a British water polo team to the Melbourne Games, and in this connection a brisk business is being done in the sale of pencils with firms' names printed on them. The minimum quantity is 3 gross at the price of £3 a gross; and Mr. Edgar will be glad to receive enquiries at his private address, The Elms, Birdham, Sussex.

In Parliament

Out of this World ★ Hopes Raised and Dashed Fair Shares for All ★ A Ray of Cheer

WE make no reference to the Budget in this column as it is discussed fully in our editorial pages. Instead we ponder another financial problem which prompts us to speculate whether the Minister of Fuel and Power is a Yogi.

Adepts in the art or science of Yoga are said to be able to leave their bodies at will and depart on timeless, spiritual journeys to far-away places and indeed, to distant stars and planets. A fascinating pastime, to be sure. But, if over-indulged, entailing, perhaps, a tiny risk to the devotee of his losing touch, a little, with reality insofar as his own land and planet are concerned.

Whether the Minister is a Yogi or not we do not know. But he certainly appears to be somewhat out of touch with reality, and gives the impression that he is a regular visitor to a certain neighbouring heavenly body—the moon, no less. For only last week he said in the House that no one could complain about an additional sixpence on the price of a ton of coal when it was already £7 10s. a ton!

And no one, we suppose, could complain about a few per cent. increase in freight charges; or the paltry few shillings rise in the price of coal and coke and a lot of other things that will inevitably follow; or the trifling advance in the Retail Prices Index; or the insignificant leap in Post Office charges; or, indeed, any of the other continual little increases in the prices of everyday necessities with which contemporary life is beset. Everything is so expensive already that all these constant little additions to our bills just don't mean a thing.

Good show, Mr. Jones. Keep it up. A few more Monster Moonbeams from the Larger Lunacy like that and you'll be in the running for election as Grand Lunar.

How are the recent capital cuts likely to affect the fuel gap? Practically not at all, said the Minister reassuringly in reply to a recent question. Meanwhile, no doubt with this troublesome gap in mind, the Gas Council seems to be keeping its finger firmly on the pulse of research into ways of overcoming the 'formidable technical problems' that stand between these islands and the shipment of liquid gas from far-away oilfields. Research into these problems was being pressed forward by oil companies and others in America, said the Minister hopefully. And then went on to dash any hopes he might have raised by adding that he would not care to forecast when or even if the problems would ever be solved.

Of course, if some bright spark does think up a way of shipping the inflammable stuff across the ocean without blowing up the ships that carry it, not only will the fuel gap be that much narrower, but, in addition, the fight for cleaner air to breathe will be that much nearer victory. But that's looking into the future. To return to the present, the air, it seems, is now a little thick with ruffled feathers over alleged injustice in the distribution of household smokeless fuels. So said Mr. A. Palmer, Labour and Co-operative Member for Cleveland, who added that the people who were really hard done by when it came to getting hold of a fair share of smokeless fuels were suppliers belonging to the Co-operative movement.

But under-production and not injustice was at the root of this evil, said Mr. David Renton, Parliamentary Secretary, on behalf of the Minister. The outlook, however, really did not look too gloomy: A doubling of the output of Phurnacite was planned by next January and, thinking still further ahead, two large pits were being sunk in the anthracite area, went on Mr. Renton. This comforting news failed to mollify Mr. Palmer, however. Something should be done now to eliminate unfair distribution with production as it was today, he thought. To which the Parliamentary Secretary issued an invitation to his questioner: The National Coal Board would, he felt sure, be grateful for any advice and guidance that might assist its distribution methods. Meanwhile it was doing its best to provide fair shares for all.

The business of the gas industry has, of course, always been to bring a little light and warmth and cheer into the homes of its patrons. Of course the light has rather gone out of the picture in recent years. And—during a cold snap—there are those who tend to doubt whether attempts to supply the warmth and cheer are altogether wholehearted. However, one real little ray of light and cheer has undeniably shone in the industry of recent weeks—or perhaps it would be more exact to say amongst ex-members of the industry. For, as a sequel perhaps, to questions which have been put to him from time to time, the Minister disclosed that he had received and approved the Gas Council scheme for increasing the pensions of ex-gas company and other pensioners who had gone wanting under the Pensions Acts, 1944 to 1952.

NEWS

In Brief

Just in Time

POLICE broke in after a neighbour had noticed that the newspaper and milk had not been taken in at the home of Mr. and Mrs. J. Fearson Seatree, Eldwick, Bingley. The couple, aged about 70, were found unconscious in bed, seriously affected by a gas leakage. Later, Bingley Hospital reported them to be 'improving.'

'Mr. President'

Mr. C. A. Macleod, Sales Director, R. and A. Main Ltd., Main Refrigeration, Ltd., and Main Water Heaters, Ltd., who is this year's Captain of the S.B.G.I. Golfing Circle, has been elected President of the Suffolk County Golf Union.

Crowle (Lincs.) Parish Council are to make application for a gas supply to be provided for the town, which has been without gas since the closing of the local gasworks in 1939. When the Council approached the East Midlands Gas Board some time ago it was stated that it would be some considerable time before a supply could be made available.

Closed . . .

After 97 Years of service Midleton (Co. Cork) Gas Company officially closed down on Saturday (April 7) following a month's notice to consumers.

. . . Closed . . .

Colwyn Bay Gasworks ceased manufacture on March 24, and is now taking full supplies from the North Wales Grid. Gas was first supplied in 1883 by the Colwyn Bay and District Gas Lighting Company Ltd., and was later transferred to the local authority in 1901.

. . . Closed . . .

Penicuik (Midlothian) Gasworks has closed down after supplying gas to Penicuik and district for nearly 80 years. The town's gas supply now comes from Granton. Gas was first introduced into the paper mills at Penicuik in 1830, and in 1835 gas lighting was installed in the local church. Ten years later, gas lighting was generally adopted by the inhabitants of the district.

. . . Closed

The Gasworks in Wellington Street, Thame, Oxon, have now ceased production, the first time the works have not made gas in 100 years. Gas consumed in Thame is now being relayed from Oxford along a new pipe line which was started about a year ago. The old Thame Gas and Coke Company was formed in 1849, and the works were built in 1851. The new pipeline follows the main Thame-Oxford road, and it is intended to supply the villages en route

Blackpool: The North Western Conference

'WE WILL FIND £1½ MILL. INCREASED OVERHEADS OURSELVES'

—Mr. D. P. Welman

THE Chairman of the North Western Gas Board, Mr. D. P. Welman, is determined to find as much as possible of the nearly £1½ mill. increased overheads that the Board is likely to encounter during this financial year 'out of our own working efforts.' He said this in his winding-up speech at the Board's area conference which was held at Blackpool on April 13-14.

He said: 'I did take the opportunity when the Parliamentary Secretary was here to suggest that the Chancellor might achieve a better position by easing the restrictions on the sale of gas cookers. At the present we in this area are going to have to face overhead charges that we cannot recover, as a result of our reduced sales of approximately £500,000, possibly more, in this coming year.

'This £500,000 must be added to £810,000 increases in wages and salaries that we're now enjoying, and to £125,000 in respect of increased freight charges, which gives a total of just over £1,435,000.'

It had been said too often, said Mr. Welman, that nationalised industries, faced with the difficulty of meeting increased costs, were in a 'nice easy position because they merely pass them on to the consumer.'

Mr. Welman asserted that the £500,000 overheads which could not be recovered as a result of the Chancellor's activities, could justifiably be passed on, but where would that get them? 'That's why I want the Chancellor to reconsider the cooker question. If we pass that amount on to the consumer in increased prices for gas, then all we are doing is to make it still more difficult to manufacture exportable goods at the lowest possible price.'

The alternative was to make a loss. But the Minister of Fuel and Power had made it perfectly clear that he did not intend to give directions to the nationalised industries to hold their prices. In other words he had said 'I do not intend that we shall subsidise the nationalised industries.'

Said Mr. Welman: 'I say that in this emergency—and I think it will probably last for 18 months or more—we are going to take neither of these courses. Instead we are going to find as much of this difference of nearly £1½ mill. out of our own working efforts as it is possible to find.'

'Some of it we can find. I think we can find probably half a million pounds—and I think I can say now that I know where that can come from without affecting this meeting—but, to find that other million pounds we have to ease back, temporarily, to meet this emergency, on a great many things which we consider necessary to our future progress.

'We must also, in every department, and on each square foot of shop floor, find whatever is available and whatever can be found to meet this difference of £1 mill.'

'I don't come to you and tell you we're going to find a million pounds unless I believe we're going to find it.'

The conference opened at the Winter Gardens in Blackpool on April 13 after a reception the night before given by the Mayor and Corporation in the Spanish Restaurant at the Winter Gardens. The Mayor opened the Conference and welcomed the delegates to Blackpool.

Mr. Welman thanked the Mayor for his good wishes, and welcomed Sir Harold Smith, Chairman of the Gas Council, and Sir Henry Jones, the Vice-Chairman.

Mr. Welman went on to welcome the other visitors, who included Mr. David

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Six hundred workers' representatives once again thrash out their problems face-to-face with top management

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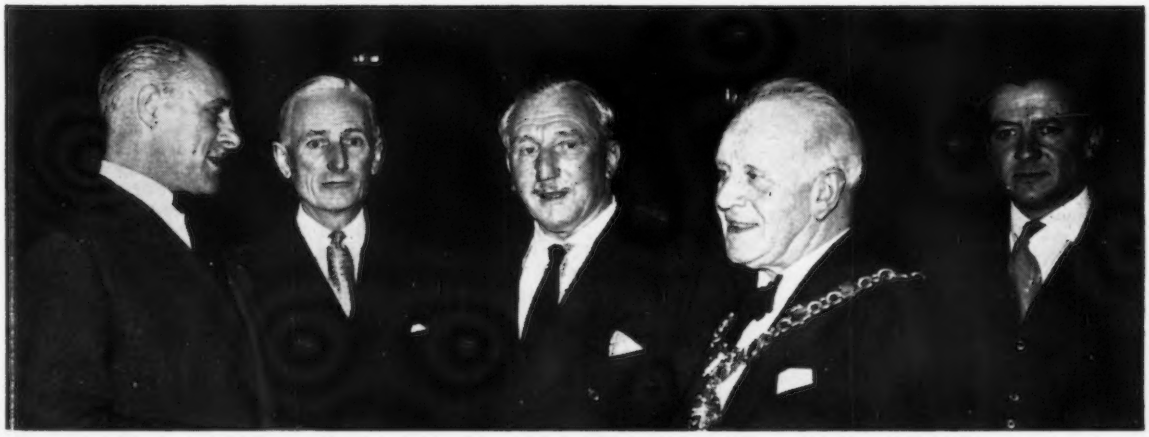
Renton, Parliamentary Secretary, and Mr. Owen Francis, Under-Secretary to the Ministry of Fuel and Power, Mr. A. Wilson, the Regional Director of the Ministry, Mr. W. E. Webb, Vice-Chairman, National Joint Council of Gas Staffs, Mr. E. L. Mills, the Gas Examiner, and Dr. A. B. Badger, the Industrial Relations Officer of the Gas Council.

The delegates—600 of them—were all drawn from the joint consultative committee councils at the different undertakings.

(*Continued overleaf*)



Chatting between sessions are left to right: Mr. Welman, Sir Henry Jones, Sir Harold Smith, Alderman C. Dunn, Mayor of Blackpool, and Mr. Owen Francis, Under-Secretary, Ministry of Fuel and Power.

This was the third such conference, the first having been held two years ago at Southport.

Sir Harold Smith, in his remarks, described the purposes of joint consultative committees and how these committees had been developed more in the North West than in other areas. This conference was the outcome of the interest which was being shown.

On educational schemes, he said they would help every employee, whatever his job, to do that job more efficiently. At the same time they would safeguard his security and give equality of opportunity—an essential incentive to all young men entering the gas industry.

Mr. David Renton spoke about the Clean Air Bill now before Parliament. He pointed out that a hundred years ago Parliament had gone to a great deal of trouble to introduce clean water into the country. This was now universal and accepted as a necessity. Why should we not have clean air to breathe? The problem was of some magnitude and entailed the replacing of 19 mill. tons raw coal with gas and coke.

Different from Post Office

Mr. Renton said he had voted against the nationalisation of the gas industry in 1948, but now gave it his wholehearted support and every encouragement. Nationalised industry was completely different from such Government enterprises as the Post Office. The gas industry was a public commercial enterprise for which the Minister must provide capital and be responsible to Parliament.

Thanking Mr. Renton, Mr. Welman said the Clean Air Bill was 'a terrific opportunity' for the gas industry.

Mr. H. G. Hall, the Board Safety Officer, then presented his paper 'Safety is no Accident,' which was followed by a discussion.

In the afternoon Mr. W. B. Harrison, Group General Manager of the Central Lancashire Group, presented his paper 'Joint Consultation.' This also was followed by lively discussion.

The final session, on April 14, produced some questions from employees which were answered from the platform by headquarters staff. Some questions were strictly domestic: a demand for 6-hour shifts for shift-workers to compensate for those 'lost weekends' was one of them. A request that the Board's research work should be published in 'Link-Up' was carefully noted. How the 'credit squeeze' would influence the Board's educational policy, was probably one of the most important questions.

EXHIBITION

Latest Technical Developments

While the conference was on an Exhibition was held in one of the galleries of the Winter Gardens, showing the latest technical developments taking place in the North Western Gas Board, and some of the newer gas appliances in production or in the prototype stage. The exhibition was entitled 'Gas—Where it Goes from You.'

Dealt with were research into the possibilities of producing a satisfactory domestic fuel, and the processing of ammonia liquor to give a saleable product plus an innocuous spent liquor acceptable to local authorities' sewage systems, or streams and rivers under the control of the local river boards. A further line of research was into the application of a process for freeing purified gas of the organic sulphur compounds which it still contains.

The first exhibit demonstrated the Rochdale Process for the increase of coal throughput in a continuous vertical retort by the introduction of a 'carrier' gas into the base of the retort. This was followed by a less well known application of this process. This is the Rochdale Process applied to the manufacture of a low temperature smokeless fuel from a coal of about 35% volatile content. Here the process is similar, but the coal throughput is kept at the normal rate and the flue temperature reduced from 1,300°-1,350°C. to 850°-900°C.—resulting in a perfectly-carbonized fuel containing about 4% volatile matter. This fuel is reasonably strong with a shatter test of 85% through a 2 in. screen. At the same time it is easily ignited, coming to its maximum temperature as quickly as high temperature coke. However, it gives a more cheerful fire and one of more intense radiation.

The next exhibit showed the development taking place in the production of briquettes or ovoids from high volatile coal. This is still in the experimental stages and ovoids were only on view in order to show some of the many difficulties, and how these were being successfully overcome. The process consists of oxidizing the coal which has been ground to go through a 200 mesh sieve (though larger grains of about $\frac{1}{16}$ in. are being tried) drying to 4% moisture content, mixing it with a suitable binder such as pitch, briquetting it in a briquetting machine and carbonizing it at about 600°C.

On the stand were shown samples of successful briquettes made by this process—successful because all the variables (moisture content, degree of oxidation, etc.) were kept at pre-determined and known-to-be-successful values—and also others that failed because those values were not being realized. A sample briquette from a production batch is taken before carbonizing, and is subjected to a rise of temperature under its own swelling pressure in a specially designed electric furnace, to test the suitability of that batch for further processing. The successful briquettes are finally carbonized in an ordinary horizontal retort at a suitably low flue temperature. The briquettes may be charged by a suitable charging machine, but must be raked out by hand.

Abstracts from the Two Papers at Blackpool

1. JOINT CONSULTATION

—By W. B. HARRISON, Group General Manager,
Central Lancashire Group.

ALTHOUGH district consultative committees are the main concern of this paper, this is not the only means of joint consultation taking place in the area.

Regular quarterly meetings under the direction of the Chairman of the Board are held between full time members of the Board, headquarters officers concerned and group general managers. These meetings provide an opportunity for outlining Board policy and discussing day-to-day problems. It has always been an outstanding feature of the operation of the North Western Gas Board that senior officers and technicians are consulted, particularly to obtain the reaction of groups, whose approach to problems varies appreciably because of the different conditions that exist in different areas.

Answers on the Spot

Regular meetings are held between the Board, headquarters officers and group officers in each individual function of production, distribution, sales and service, accountancy, industrial gas sales, coke, safety, home service, etc. The chair at these meetings is taken whenever possible by either the Deputy Chairman or full time member of the Board. This in my opinion is of the utmost value as authoritative answers can be given on the spot.

As between Board and group, so regular specialist meetings are held within the group between group and district officers on production, distribution and sales and service matters to make certain that all concerned in management are conversant with Board policy and are consulted about group policy.

Central Lancashire Group was formed by the amalgamation of three groups and it has been most interesting and instructive to see the different committees in action. In one group the Group General Manager took the chair at all meetings and in the other two the chair was taken by the senior local management representative, excepting one of our larges works which was under the chairmanship of one of the employee representatives. I think it was right that management should take the chair during the formative years but one of our most successful committees is that chaired by an employee representative. I firmly believe

that senior group management must be represented at all meetings. I personally review the agenda of every meeting and there are eleven committees in the Group. I attend all committees in turn, usually getting to about half the meetings and if any item on the agenda calls for the presence of the appropriate Group officer I try to arrange for his presence, always taking care to avoid an excess of such officers at any particular meeting. The presence of a senior officer usually enables a definite answer to be given.

Most of our secretaries are from management. In one case we have an employee secretary. He is most willing and painstaking but is, I feel, at a disadvantage. I do not consider that joint secretaries are necessary, neither do I believe in a formal system of voting nor in formal minutes.

Committee members are circularized and asked if they have any items for the agenda. It none are forthcoming—and this is frequently the case—I regard this as a challenge. At every meeting either myself or the senior officer present outlines developments in activities which concern the committee. In many cases extensive works reconstruction programmes are being developed and a brief outline of the objects and progress of these schemes is given to the meeting. The quarterly accounts are dealt with either by the Group Accountant or a competent member of his staff. Our development and progress as a Group are reviewed, our hopes and fears are expounded and often the assistance of the employees' representatives is sought in a particular problem. Safety is an ever recurring subject.

Our Group Sales and Service Officer and his district colleagues report on appliance sales trends and seek the enthusiastic co-operation of all employees. This activity has been particularly sucessful and the number of 'prospects' received from all employees not directly concerned with sales has shown a steady increase.

We have used consultative committees to inform all employees of the Board's uniform and protective clothing scheme, to explain the Board's training and education scheme, to enable our Medical Officer to outline the industrial medicine scheme, to answer questions and to allay fears. Thus every meeting has some information laid before it. Confidence gained, we get our significant questions under 'any other business.'

The formation of a larger Group brought opportunities for reorganization and redeployment, and we are now in the midst of many changes which are resulting in the closing down of certain depôts, regrouping of districts and the redeployment of a part of our labour force. These changes bring individual human problems which we try to consider sympathetically. Joint consultative committees are used to outline proposals and to seek the other fellow's point of view. We go further than using established committees. In any particular district where changes are contemplated all personnel concerned are seen, collectively or individually, and their particular cases examined. We have found these meetings of inestimable value. In all cases our reorganization has proceeded smoothly and with the full co-operation of all concerned. Men readily accept changes if they are kept informed and understand the reasons. They are entitled to know and appreciate management's problems and proposals. They have as much stake in the industry as anyone, and with firm and fair leadership they are always ready to play their part.

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2. SAFETY IS NO ACCIDENT

—By H. G. HALL, Safety Officer, N.W.G.B.

IT is possible to find the causes of injury without much difficulty, but the cause of the accident is quite another matter and may only be revealed by the fullest investigation. The accident in fact may, and often does, happen many times without causing any injury, but failure to appreciate this will eventually lead to injury.

Ninety-eight per cent. of accidents can be traced to personal factors. The unsafe act which results in injury may be described as the immediate cause, but indirect causes include the design of the machine, unsafe system of work, lack of training or supervision or the lack of reasonable care on the part of the workman.

Safety should be built in at the design stage. Machinery and plant built today still falls short of good safety practice, but part of this fault lies in a failure to specify in detail exactly what is wanted. Access to the crown and grips of spiral guided holders is obviously necessary for maintenance and lubrication. Yet hundreds of these holders have been built with vertical ladders leaving inadequate toe room against the holder side, with awkward gaps where the ladder crosses the spiral rails and without handrails on the grips.

In investigating accidents one may discover an unsafe system of work only to be told that the job has been done that way for 50 years. There must be many jobs which are done by the traditional method whether this be sound or not and longevity does not make a bad system into a good one.

Training for safe working may not be easy in the case of the tradesman as it is quite impossible to foresee all the difficulties he may encounter in his varied jobs, but that is no reason for neglecting to point out the special hazards of the industry or of the particular job to which he is being sent. In the case of men on more regular routine work more could be done in instructing them in the correct methods.

The attitude of the workman is of vital importance. If every physical and mechanical hazard were removed there would still remain certain elements of human behaviour which would cause accidents. Inexperience of the work in hand or tools to be used and ignorance of the correct procedure cause many accidents which might be eliminated by better training and better examples from more experienced workers. The almost universal desire to do the job the easiest way often results in a man taking short cuts or not procuring the proper equipment which is available in the stores or other place. Several serious accidents of this type have arisen from failure to wear breathing apparatus until it was too late or from failure to rig proper scaffolding or obtain cat ladders for roof work.

Over confidence is another cause; again and again employees do not wear goggles, respirators, hard hats, or other protective clothing provided. Occasionally, they suffer the consequences.

Poor workmanship one day, may lead to an accident years later. Welds which have failed, bolts that have dropped out (or have never been put in), failure to replace cover plates or guardrails have all figured in accidents investigated recently. Sometimes the bad workman is the one to suffer, but it is generally an unsuspecting colleague who reaps the consequences.

The main planks in this platform are training and supervision. Constant attention must be given to the design and specifications for new plants. Most designers are capable of assessing the strength of a plant for its purpose, but they sometimes overlook the safeguards necessary when repairs have to be carried out.

Unsafe systems of work can only be eliminated by those in charge of operations. I do not believe that anybody, be he worker or manager, will willingly tolerate unsafe practices or conditions *when he sees them.* He will put right what is seen to be wrong, but there is no doubt in my mind that many things which are very wrong are just not seen or, if seen, not appreciated. This brings us back to more training. Training in safety consciousness for everybody from the manager to the youngest apprentice. Unfortunately, a good deal of this work falls on the already over burdened supervisor. A high labour turnover is often made the excuse for lack of training whereas, to me, it appears a very good reason for extra emphasis on safety training for whatever the job might be.

The supervisor or foreman is the man who has control of the way in which the

job is done. He is in an especially responsible position to see that it is done safely. Orders should always include precise instructions about the proper way to do the work and checks should be made from time to time to see that these are being carried out.

Safety committees are one method of enlisting the interest and sense of responsibility of the workers. In some of our works, safety committees have been running successfully for years, in the majority of others the joint consultative committees spend part of their time on safety matters and this would appear to be a very useful approach. The Trades Unions, who are usually keen to co-operate in measures for safety, can support Management in their efforts to promote safety by still further encouraging a sense of responsibility in their members.

In the larger works today it is obvious that the station engineer cannot keep in close touch with everything which is going on, and where this is the case it is suggested that his deputy or the senior technical assistant should be charged with an especial interest in the safety of all operations.

The Board have set up a safety organization as already described and they are prepared to back whatever is deemed necessary to promote safe working. The presence of a safety officer, however, does not achieve safety; he is there to advise, to encourage, to persuade, and at times to use other means to achieve safety consciousness.

DERBY RADIO VANS CUT REPAIR SERVICE TIME BY HALF

RADIO equipment has been installed in five vans belonging to the Derby District of the East Midlands Gas Board.

A two-week testing period has been completed and attention is being given to the district's housewives as part of the normal 24-hour service. The saving in time was shown at a mains repair service exercise held in the District recently, when the use of radio cut the operation's time by half.

Three of the vans are being used for sales and service, and the other two for mains repairs. Two extra vans, also wired for radio, are held in reserve. The vans receive instructions from control panels at the Board's district H.Q. in Friargate, Derby.

The vans can commmunicate with each other and can be contacted from control anywhere within a 10-mile radius of head office and, where there are favourable conditions, within a 20-30 mile radius.

A Nottingham housewife walked round the corner from her home to telephone a complaint to the local gas department. *On returning she was astonished to find a service van had arrived at her home before her.*

Mr. Roy Hendley, an East Midlands Gas Board maintenance fitter, tries out the radio apparatus in his van.

Diary

April 26.—INSTITUTE OF FUEL, EAST MIDLANDS SECTION: Annual General Meeting followed by a film show. Gas Showrooms Lecture Theatre, Nottingham. 6.15 p.m.

April 26-27.—SCOTTISH ASSOCIATION OF GAS MANAGERS: Spring Meeting at Paisley.

April 27.—MIDLAND JUNIORS: President's Day. Morning Visit to Saltley Gasworks. Afternoon Visit to the Gas Council's Midland Research Station, Solihull.

April 27.—SCOTTISH JUNIORS (WESTERN: Annual General Meeting. Gas Showrooms, 522, Sauchiehall Street, Glasgow, C.2. 6 p.m.

April 28. — MANCHESTER JUNIORS: Annual Dinner, Baronial Hall, Blackpool.

May 1. — SOUTH EASTERN G.C.C.: Caxton Hall, London. 11 a.m.

May 1. — EAST MIDLANDS G.C.C.: Sheffield Chamber of Commerce, Cutler's Hall, Sheffield, 11.30 a.m.

May 1 and 2.—INSTITUTE OF FUEL: Opening conference of a special study of 'Domestic Heating in the United Kingdom — Present and Future.' Church House, Westminster, S.W.1. 10 a.m.

May 3.—NORTH OF ENGLAND SECTION, I.G.E.: Fifth Annual General Meeting, White Swan Hotel, Alnwick, Northumberland. Luncheon, 12.0 for 12.30.

May 4.—LONDON JUNIORS: Short Paper Night. 'Some Odd Calculations,' E. E. Blandon; 'Some Notes on the Provision of Peak Load Therms from Low Boiling Point Hydrocarbons,' J. B. Grant; 'The Heart of a Gas Installation—Some Recent Developments in Meter and Meter Installation,' T. B. V. Hirst.

May 4.—SCOTTISH JUNIORS (WESTERN): Visit to Ascot Water Heaters, Ltd., London.

May 4 and 5.—BRITISH GAS STAFF ASSOCIATION: Annual Conference, Town Hall, Great Yarmouth.

May 5.—EASTERN JUNIORS: Annual General Meeting. Royal Hotel, Lowestoft. Followed by luncheon and afternoon visit to Somerleyton Hall and Gardens.

May 7.—LONDON AND SOUTHERN SECTION, I.G.E.: Spring Meeting and Luncheon, Connaught Rooms, Great Queen Street, London, W.C.2. 12.30 p.m.

May 9.—INSTITUTE OF FUEL, MIDLAND SECTION: Works visit and Annual General Meeting.

May 9.—SOUTH WESTERN SECTION, I.G.E.: 'Latest Developments in Integration,' G. F. Oliver, Exeter.

May 9-19. — MECHANICAL HANDLING EXHIBITION: Earls Court, London.

May 12.—MANCHESTER JUNIORS: Meeting at Garston works.

May 12.—NORTHERN JUNIORS: 'An Unusual Problem of Gum Formation.' F. W. Sawyer. Durham.

CONTINUOUS TAR DISTILLATION

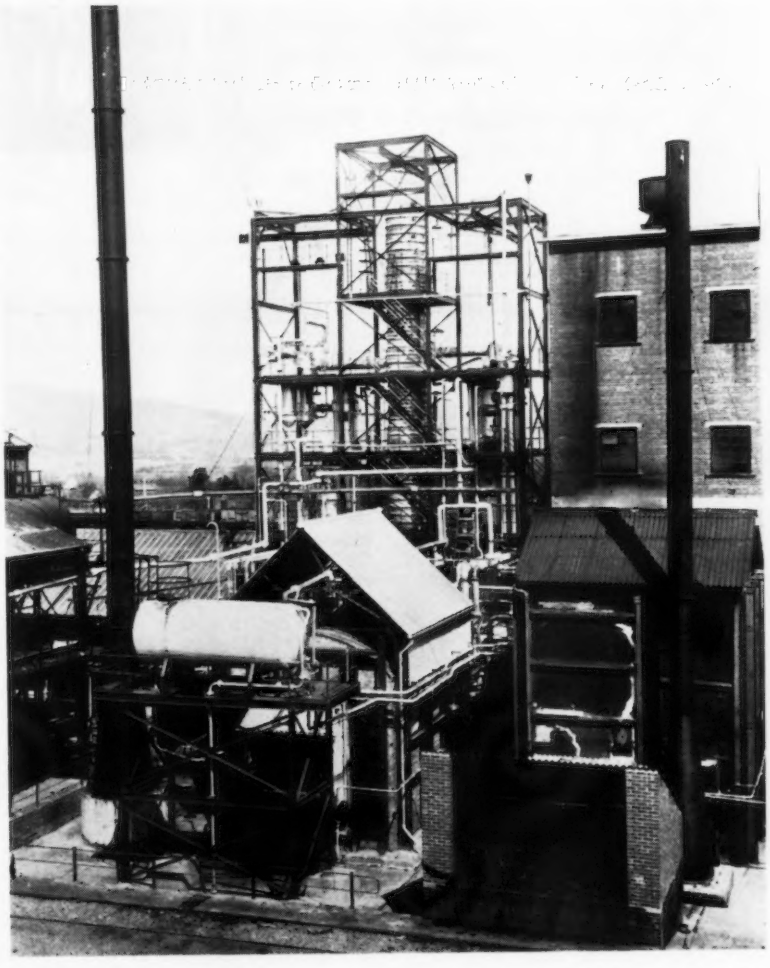
With the new Wilton Pipe Still

HIGH capacity in single units, efficient fuel utilization, accessibility of pipes for inspection and maintenance and easy replacement of tubes—these are among the claims put forward for the new Wilton pipe-still which has been developed to meet the requirements of continuous tar distillation in keeping with modern chemical practice. While the pipe-still is of entirely new design it incorporates the recirculation system which for many years has characterized Wilton plants. The first of the new units was recently put into operation at the Caerphilly tar works of the National Coal Board, South Western Division, and several further important installations are currently under construction.

In this system of distillation an approximately constant volume of hot pitch is continuously pumped in a closed circuit through the pipe-still and distillation column. Crude tar (usually preheated) is fed into the distillation column, where it comes into liquid/liquid contact with the hot pitch. In this way tar at approximately 120°C. is brought into direct contact with four or five times its volume of pitch at 350°C. with the result that the volatile oils are distilled off. The pitch is thereby cooled to 280°-290°C. and is pumped through the pipe-still to be reheated to 350°C. The pitch constituents of the tar remain in the pitch circulating through the pipe-still, an equivalent quality of the pitch being withdrawn from the distillation column as product.

The crude tar does not come into contact with the pipe-still tubes and, therefore, is not directly subjected to thermal cracking conditions; the products of dissociation of ammonium chloride do not come into contact with the pipe-still tubes; and as there is substantially no vaporization in the pipe-still, and as the material flowing through the tubes is of high boiling-point, no thermal cracking takes place and overall distillation losses are small. It is unnecessary to operate the pipe-still at high pressures and the recirculating reheating system gives the plant great flexibility. Again, since the pitch product is steamed to the required hardness in the distillation column, its quality can be quickly and accurately adjusted.

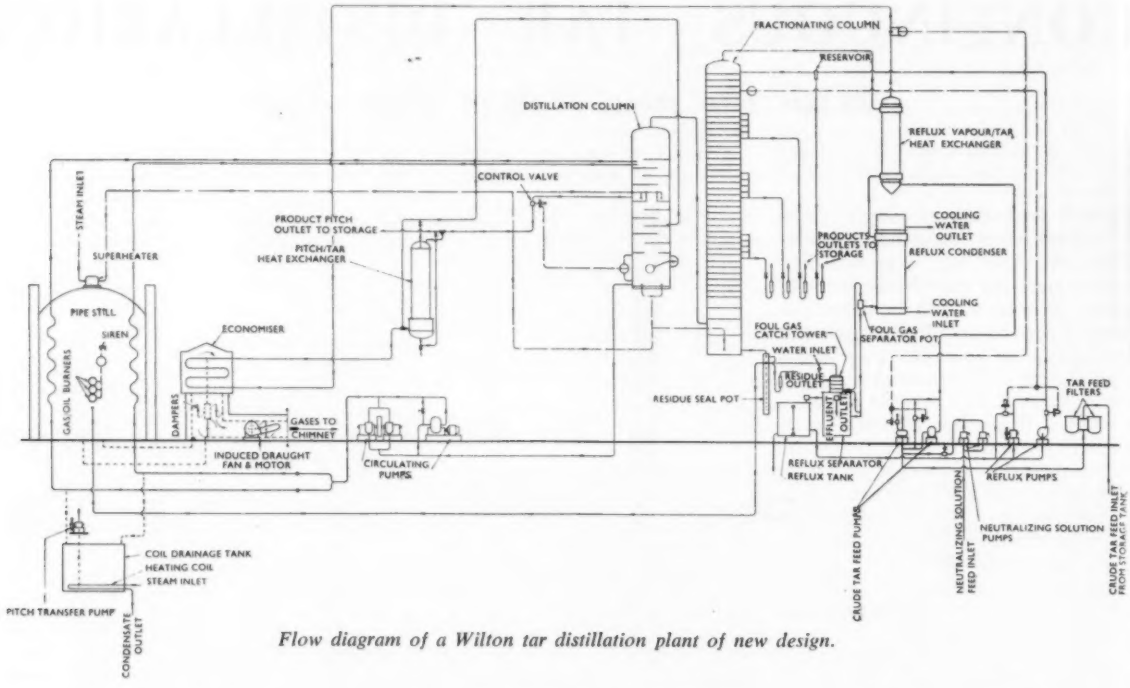
The new Wilton pipe-stills are of two types—the radiant and the convective. Essential features of the radiant type are effective use of direct radiant heat under conditions of strict control and the full use of convective heat after the flue gas temperature has been reduced below an economical radiating value. Two separate circulations are used, pitch from the distillation column being pumped through the pipe-still in two streams. In each circulation the pitch first passes upwards through a convection bank of tubes in counter-current to the flue gases in the furnace, the two banks of tubes in the convection section being placed side by side in the same chamber at the back of the furnace. After passing through these tubes, each pitch stream passes to the bottom of the banks of tubes in the radiation section, passing upwards through them in parallel flow with the hot gases from the burners. The two banks of radiation tubes are located on opposite vertical walls in the combustion chamber, with the two burners placed one above the other between them.



Tar distillation plant of 150 tons per day capacity at the Caerphilly tar works of the National Coal Board, South Western Division.

All instruments recording the flow, inlet pressure and outlet temperature of the pitch in each circuit are mounted on the control panel with the control valves close by. The operator is thus never in doubt about conditions in the pipe-still and has the means of adjusting them ready to hand.

The convective pipe-still is designed to employ flue gas recirculation, so that the circulating pitch receives the whole of its heat by convection. The system consists essentially of two separate banks of pipes placed on opposite sides of the central combustion chamber and two separate pitch circuits are used as in the radiant pipe-still. The pitch from the distillation column is pumped through the pipe-still by a main circulating pump, beyond which it is divided by control valves into two streams. After passing through their respective tube banks in the convection chambers the two pitch streams return to the top part of the distillation column. Fuel is burned in the combustion chamber and flue gases are recycled to the combustion chamber from the base of the convection chambers.



Flow diagram of a Wilton tar distillation plant of new design.

The convective pipe-still is readily adaptable to plants of small capacity. In such plants there is only one bank of convection tubes instead of two, and a single pitch circulation instead of a divided flow. The feature of flue gas recirculation is retained.

The accompanying flow diagram shows the essential features of a Wilton tar distillation plant of the new design, the pipe-still in this case being of the radiant type and no tar dehydrator being used. Operation of the plant can be followed by reference to the diagram.

Crude tar from storage tanks is fed through one of two static filters, either of which can be switched out of circuit for cleaning when required. It then passes to two feed pumps, one of which may be electrically driven while the other (normally used as a standby) is steam driven. The pumps are automatically controlled to maintain a constant predetermined flow of tar.

The tar is then preheated by passing through three heat exchangers: A vapour/tar heat exchanger which takes the latent heat from the vapours leaving the top of the fractionating column; an economizer which takes heat from the flue gases leaving the pipe-still setting; and a pitch/tar heat exchanger which takes heat from the pitch leaving the distillation column.

Each of these exchangers has by-pass pipes and valves so that it can be drained and serviced while the plant is on load; all the exchangers are designed so that the tar system can be put under slight pressure if it is desired to suppress vaporization of the tar before it enters the distillation column. If all the pumps are steam driven it may be advantageous to incorporate a steam/tar heat exchanger after the vapour/tar unit.

The distillation column consists internally of a series of trays over which the pitch and tar cascade. Hot pitch from the pipe-still enters at the top and cascades into the steaming section, where the injection of superheated steam establishes the required pitch hardness and strips the pitch of higher-boiling volatile oils which pass upwards with the steam to the vapour outlet, pitch entrainment being prevented by the scrubbing of the vapours as they ascend through curtains of cascading pitch.

Pitch from the steaming section overflows through a downtake pipe, or alternatively through a centre vapour uptake pipe, on to further trays, where it meets the preheated tar entering through the tar inlet. Pitch and tar cascade together in a thin layer over the trays so that the tar is volatilized by the heat in the pitch, the resulting vapours passing upwards through a series of pitch curtains into the steaming section and thence to the vapour outlet. Since all the vapours pass through curtains of the hottest pitch from the pipe-still they become significantly superheated and carry the superheat into the fractionating column.

Partially cooled and containing the heavier oils from the tar, the pitch now flows to the bottom of the column and passes to an electrically driven main pitch circulating pump which delivers equal quantities to the two circuits of the pipe-still; a steam driven pump is provided as a standby or alternatively two steam driven pumps may be used. To keep the circulating pumps fed with liquid, the amount of pitch bled from the system as product is regulated by a valve which is operated by a pitch level controller in the bottom section of the distillation column. The partly-cooled circulating pitch is now released in the pipe-still. The product pitch bled from the distillation column passes through the pitch/tar heat exchanger, where it is cooled to about 200°C.

The volatile tar constituents pass from the distillation column into the fractionating column, which consists of a series of bubble-cap trays of improved design. The bottom sections beneath the lowest tray comprise the vapour entry connection and a reservoir for the column residue fraction, the reservoir being equipped with steam pokers so that the residue can, if desired, be stripped before passing out through the seal pot. Every section of the column is equipped with a pad, so that the withdrawal point of any side-stream fraction can be altered if necessary. The number of trays between side-streams is chosen to give the required product specifications.

The vapour from the fractionating column passes through the vapour/tar heat exchanger to the condenser. This has an open top to allow the tubes (with water inside) to be cleaned by brushing when the plant is on load. The condensate passes to the separator, from which the water flows to drain and the oils flow to the reflux tank. The non-condensible gases pass through a foul gas scrubber irrigated with water and are then sent to be burned in the pipe-still.

The oils in the reflux tank are pumped to the top of the fractionating column, the operating pump being electrically driven and the standby steam driven, or both pumps may be steam driven if desired. The flow of reflux through either pump is controlled automatically from the temperature on the fourth plate of the fractionating column so that the temperature throughout the column is kept stable and constant. The products from the fractionating column (except the residue) pass through rotameters into storage tanks.

The new pipe-still for continuous tar distillation has been developed by Chemical Engineering Wiltons, Ltd., Bird Hall Lane, Cheadle Heath, Stockport, a subsidiary of Simon-Carves, Ltd.

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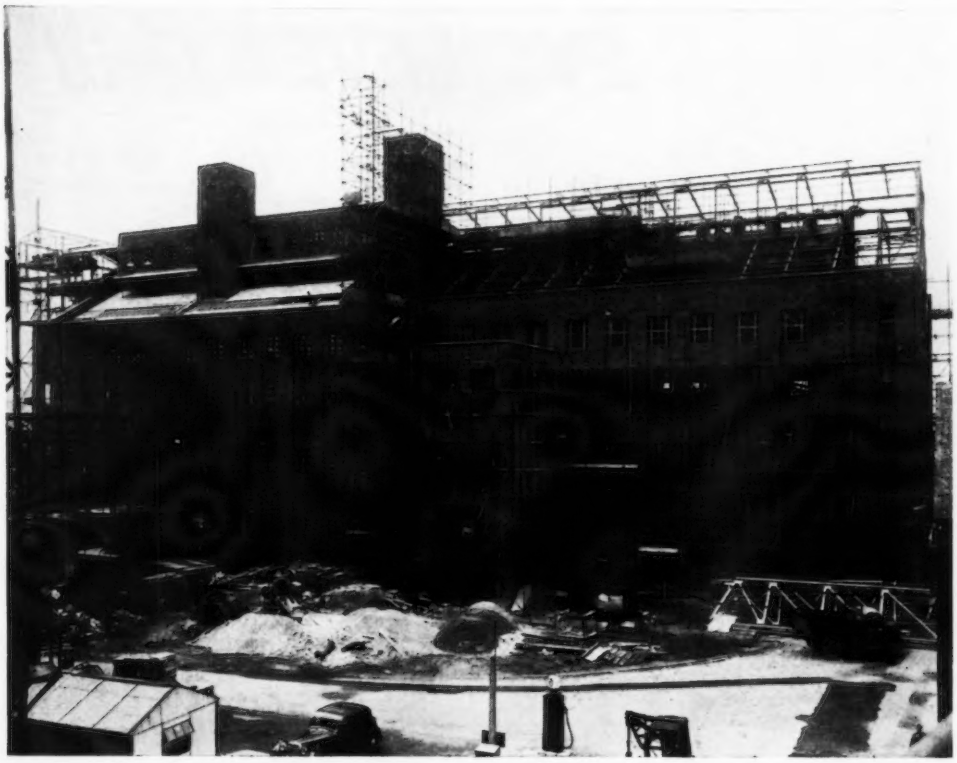

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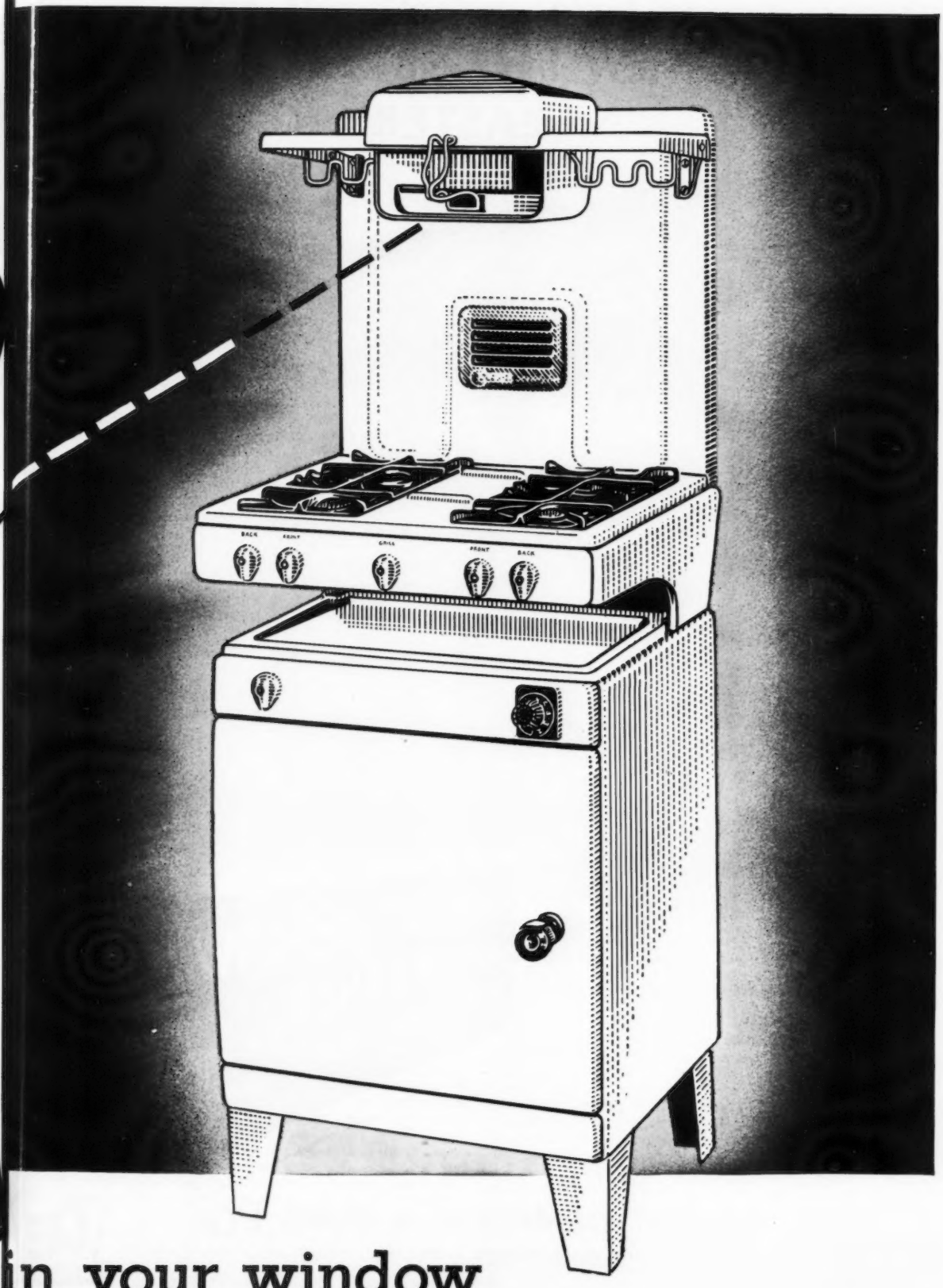

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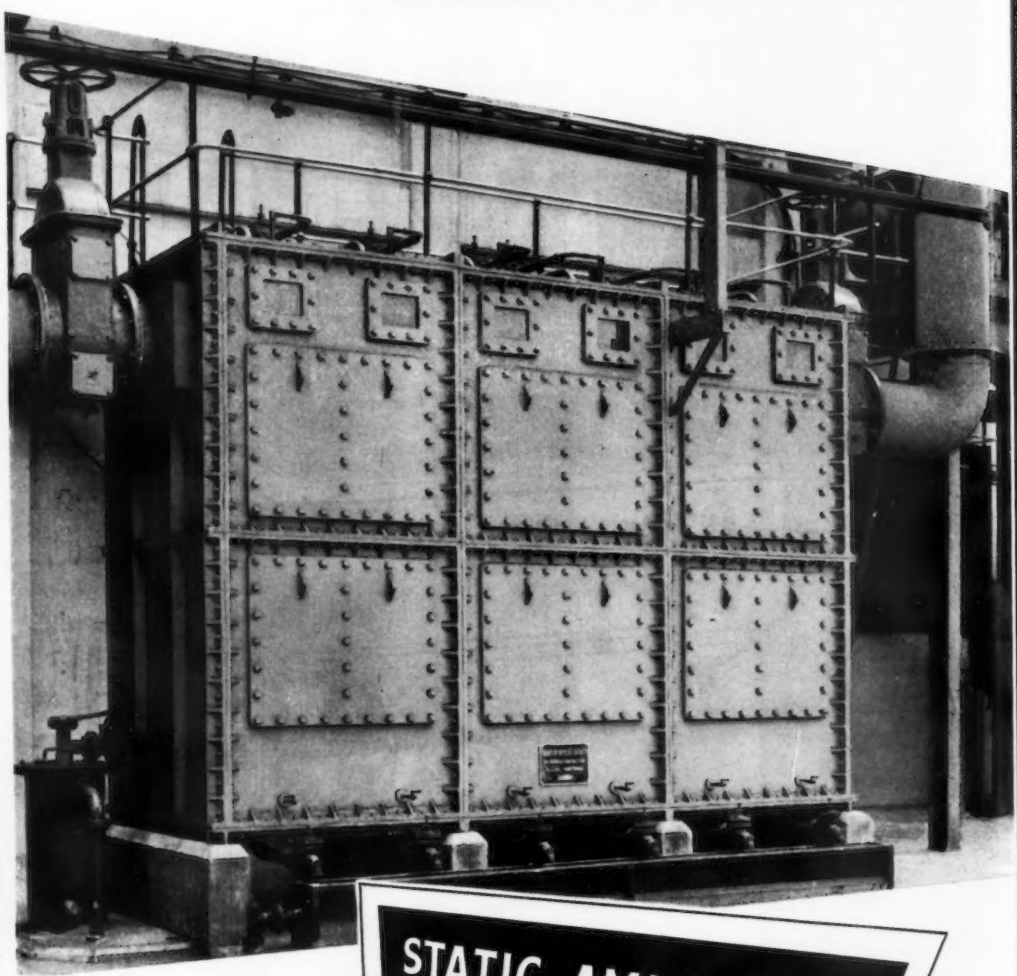

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The Pay Packet (Or Cheque) and the Cold War

(FROM OUR LABOUR RELATIONS CORRESPONDENT)

THE developments in the wage and salary fields in the period since the end of the second world war cannot be understood or appreciated, unless considered against the background of full employment in the sense we shall define presently, and which has obtained more or less during the whole of this period.

Although a policy of full employment is accepted by the major political parties in the country, it has come to pass in this country not because of deliberate economic planning by any British Government, but because of the continuation of the 'cold war' and the tremendous sums of money, material, and above all manpower involved in the consequential rearmament and military service.

We are reminded that after the second world war we did not relax to peace as we did from 1922 to 1929, but that we have, on the contrary, been forced into 'cold war' and a continuous costly rearmament. And many of us have failed to realise that the scale on which this cold war is conducted has become a barrier to easy living. For such a great deal of our total effort goes on making unexampled means of destroying others that we are unable as well to enjoy the material progress which we claim as our birthright, unless we remove old-fashioned barriers to maximum output.[1]

What is Full Employment

Full employment as we know it to-day does not mean a state of no unemployment at all. Some unemployment is at all times inevitable. There are the plain unemployables—men and women, who, because of some tremendous mental or physical handicap which cannot be got round or cured, are incapable of being employed on any work. Then there are the parasites or the incorrigibly lazy who, one might say, lacking self-respect and moral fibre, are quite content to take out of the common pot at all times more than they put in; if, indeed, they put in anything at all. Also there is bound to be what the economists call *frictional* unemployment in seasonal employments such as agriculture, building, toys, and the like. And there is *structural* unemployment due to fundamental changes in demand. After every major war, for example, many firms find that the requirements of the markets from which they have been isolated have greatly altered. Full employment also does not mean that every person is secure in the particular job he holds at any particular time.

What it does mean, however, is that the time taken by a man to find another job after losing, or giving up his existing one, is short; and that there are as many vacant jobs as there are unemployed men to fill them. In other words, it is a sellers' and not a buyers' market for labour.

We could, of course, lose this state of affairs, if the cold war were to stop; or, whether it stops or not, by irresponsible action on the part of the unions, employers, or Government or all three together.

Full employment is a revolutionary experiment for this or any other country. And because of its newness, or perhaps because of bad consciences that not everything is done to ensure its continuance, it cannot be said that either the workers, the unions, or the employers as a whole are confident that it can always be maintained. Some employers point to the vast power now enjoyed by the trades unions and the constant claims being submitted for increased remuneration and improved conditions of service which will, they say, inevitably lead to the position where we price ourselves out of the world's markets, with consequential widespread unemployment.

Some employers and, indeed, some trade union leaders refer to the great difficulty of maintaining discipline when workers become indifferent to losing a job, when they know full well that there is another job or other jobs awaiting them elsewhere.

And the continuation of restrictive practices, including vexatious lines of demarcation of duties, the resistance to new machines and to new methods of production, would seem to show that many workpeople are still afraid of adapting themselves or working themselves out of a job. There is still some fear, some uncertainty, some jockeying for position, some ill-informed and ill-considered criticism in respect of the principle of full employment.

Employees are now able to choose their employer and unions have consequently become very powerful; the economic future of this country largely depends on the restraint and responsibility with which they use this newly-found power.

Danger Signal

The present recession in the motor-car industry is, it is to be devoutly hoped, only a short-lived one. But it is a danger signal that we might price ourselves on a wide scale out of the world markets.

It would be of interest and importance to examine the main effects full employment has had since the end of the war.

There has been a continuous narrowing of differentials between the rates of pay of unskilled and skilled workers on the one hand; and between the remuneration of working class people and the professionally skilled and qualified middle classes on the other. This has been only partially due to the kind of wage and salary increases common in this country since the war; an equally important cause has been the confiscatory and increasingly penal system of taxation of the higher personal incomes. Indeed, this short-sighted process has now brought about a position where there is little or no encouragement and incentive to acquire skill and qualification in any walk of life. It would appear that the types of citizen which our taxation system seems to reward are the shady company promoters, share pushers, and the smooth, slick-tongued unscrupulous dealers in materials in short supply, and other such worthy citizens. University professors and schoolmasters, qualified administrators and lawyers, engineers, scientists, research workers and the like are being taxed almost out of existence by successive Governments. If this process is not quickly and vigorously reversed the prospects for this country are gloomy indeed. This is what a left-wing socialist[2] wrote of the middle-classes:

> 'The element of devotion in this learned-priestly tradition is absolutely essential to the processes of civilization. One cannot imagine the economic social machine running at all, without the services of this now very various class, these definitive or constructive public servants, these judges, doctors, teachers, writers, officials . . . they are practically trustworthy and efficient because they have all been brought up to and educated in this type of persona . . . it is in the ineradicable idea of disintegrated integrity which this priestly-learned class alone has fostered that the future of humanity resides.'

We shall return to this question later. Successive British Governments in the last 30 years seem to be unaware of the fundamental truth underlying this statement.

Developments Outside Collective Machinery

Here we sometimes come across a degree of social irresponsibility in the wages and salary fields among certain employers—especially among those not belonging to recognized employers' associations—when competing for labour in a restricted labour market. They offer enhanced wages and conditions of service out of all proportion to the value of the services to be rendered, and without regard to what effect their actions will have on other industries. Such employers are in no small degree responsible for the inflationary condition of our present economy. Such employers can be found, for example, in the building, engineers and electrical industries. They usually automatically pass on the increased cost to the selling price of their product without any attempt to absorb it by increased technical and administrative efficiency. When, however, their goods thus become over-priced on domestic or foreign markets, they are the first to dismiss their employees. They are the quick turn-over, easy profit type with the predatory instincts of a gambler.

Negotiations between recognized associations of private employers and trade unions are usually conducted with a sense of responsibility, not only to the industry concerned but to the general economic welfare of the country. Factors such as the industry's ability to pay in a competitive market, cost-of-living, relative rates in other industries and others are kept well in mind and weighed and discussed. But even in this responsible private sector of industry, owing to great pressure from the unions and easy market conditions, there has been too great a readiness to pay, in the absence of sufficient increased production to absorb and justify such increased remuneration. As the Chancellor of the Exchequer said in his broadcast on February 25:

'Since the war we as a nation . . . have produced in one way or another a quarter more goods and services. It is not a bad record. But the trouble is that we paid ourselves 80% more money for doing it.'

And, as Lord Beveridge[3] tells us, 'of our goods and services many were things that we could not enjoy, or expect others to enjoy.'

No Mutually Accepted Formula

According to the report of a court of inquiry into a dispute between employers who are members of the Engineering and Allied Employers' National Federation and workmen who are members of Trade Unions affiliated to the Confederation of Shipbuilding and Engineering Unions, appointed under the Industrial Courts Act, 1919,[4] it appears that in this largest sector of private industry, there is no mutually accepted formula and no expressed common assent in regard to guiding principles when wage adjustments in the industry are under consideration. But there is a considerable measure of underlying and implicit agreement that:

(i) There is no agreement that wages movements should be linked in any way directly with movements in cost of living, though there seemed to be general acceptance that fluctuations in the cost of living form one element to be taken into account in any general review;

(ii) though there are no general arrangements on the basis of profit-sharing, it seemed to be recognized that in any wage review, the general prosperity of the industry would be considered;

(iii) there is disagreement between both sides as to the basis to be adopted in assessing the workers' standard of pay. The unions contend that the basis should be the workers' minimum wage rates. The Federation claim that the basis should be the pay packet—in other words, total earnings.

(iv) Increase in total production and in the average output per person is no doubt due in part to research and development, modernization, the introduction of new machines, the development of new processes; but both sides agree that weight must also be given to the co-operation of the operatives and to the assistance of the representatives of the Confederation of Shipbuilding and Engineering Unions in measures calculated to effect increased production.

The court of inquiry came to the conclusion that there apparently is being established something very like an annual cycle of wage claims—a process which must surely tend to accelerate the general movement of wages, costs and prices. It recommended, therefore, the appointment of an authoritative and impartial body to examine the wider problems of such movement, and the complex and sometimes conflicting economic arguments which surround them, to form a view upon their implication for the national economy and our ability to maintain our present standards, and to give advice and guidance as to broad policy and possible action.

Such a body was, however, never appointed.

Nationalised Industries

The court of inquiry established under the Industrial Courts Act, 1919, to inquire into a dispute between the British Transport Commission and the National Union of Railwaymen published its reports in January, 1955.[5] That court laid down what is regarded by many as a novel principle in industrial relations. 'The nation has provided by statute,' says the interim report,[6] 'that there shall be a nationalised system of railway transport, which must, therefore, be regarded as a public utility of the first importance. Having willed the end, the nation must will the means. This implies that employees of such a national service should receive a fair and adequate wage, and that, in broad terms, the railwaymer should be in no worse case than his colleague in a com parable industry. The argument which has been repeatedly used by the British Transport Commission, that they found themselves unable to pay rates of wages which they migh otherwise deem proper and desirable is, of course, wholly in consistent with such a view.

What this means in effect is that whether a nationalised industry can afford to or not, it must pay its employees rate of pay comparable with those obtaining in comparable indus tries. If it cannot afford these rates at any given time, i means that it will either have to increase the price of it services or products or absorb the increases by greater effi ciency.

A second development in the field of negotiations o nationalised industries is the correspondence that has recently appeared in 'The Times' by Mr. H. J. Randall, Chairman of the London Electricity Board, and by Lord Citrine, the Chairman of the Central Electricity Authority. Mr. Randall claims that:

(1) Those who control public boards or, indeed, any form of business enterprise, have two sections of the community to consider—their employees and the public—and that it should be their aim to hold the balance fairly between both sections.

(2) But from a close insight into one great public service, he had come to the conclusion that the balance has swung heavily in favour of those workers who have the power and eagerness to use the strike weapon (and that people with small fixed incomes are receiving little or no consideration).

(3) The spearhead of this trouble is in the nationalised industries. 'Let us consider,' writes Mr. Randall, 'the technique which has been adopted throughout the country with sickening regularity. Every few months the trade unions submit "substantial" wage claims. At first there is a resistance to the claims, and the negotiators talk of arbitration. Then "mass meetings" are held by the workers; unofficial strikes are called for, generally by Communist shop stewards; pious hopes are expressed that restraint will be exercised. At this stage, it usually happens that one of the nationalised industries gives way and awards an increase. Immediately, the other nationalised industries feel compelled, quite understandably, to grant similar increases; and very shortly every industry in the country has to do the same. There follows the inevitable rise in the cost of living, and in no time the recipients of all these awards, finding themselves no better off than they were before, are again discontented and demand even larger increases; and so the process repeats itself.'

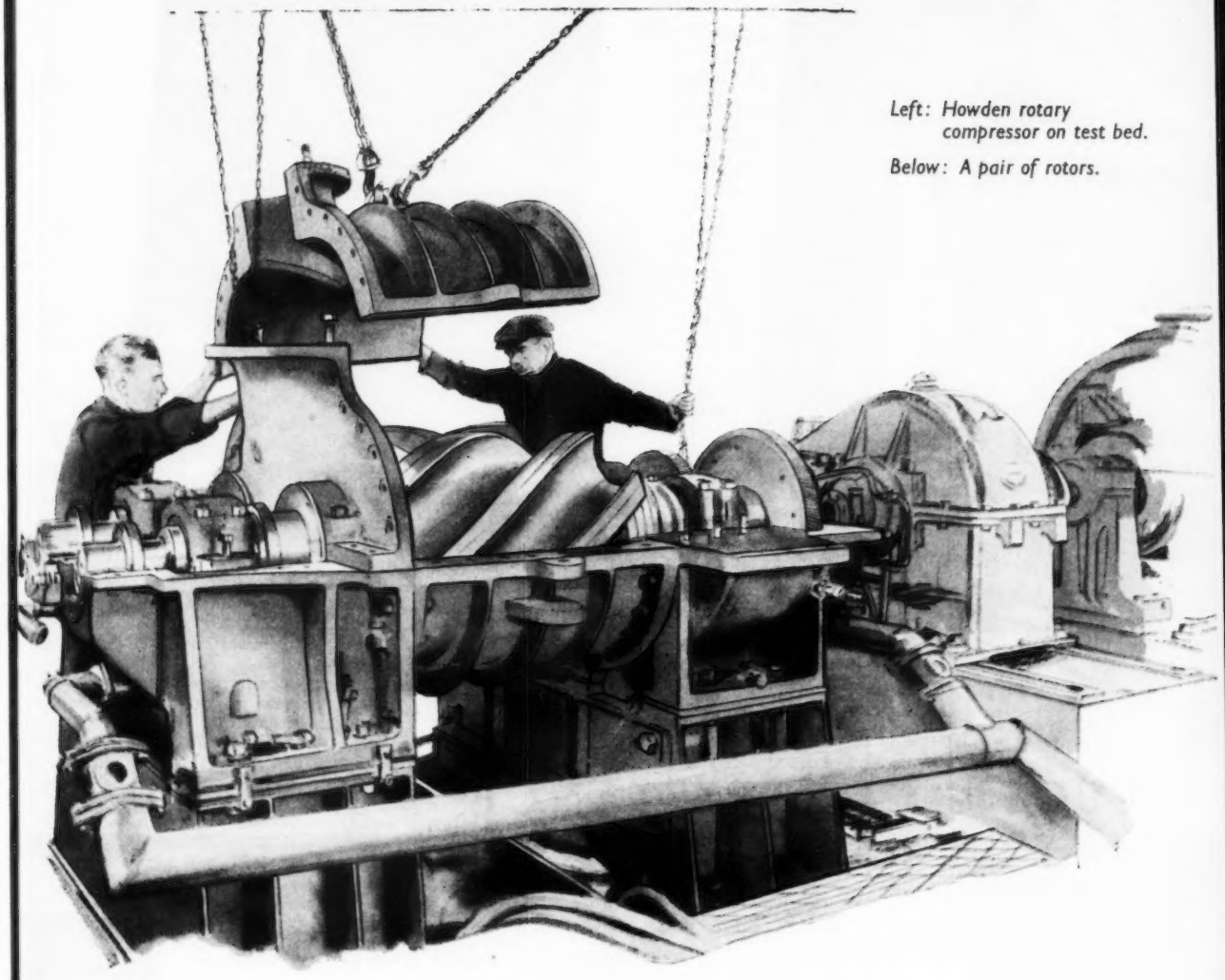
Integrity Not Questioned

(4) With few exceptions, the labour problems in nationalised industries—wage claims, conditions of service and so on—are dealt with, or the ultimate decisions are taken by men who were formerly trade union leaders but have been appointed to high positions under nationalisation. These men, who for many years were fighting for higher wages for their members, now find themselves representing the so-called employers, who are, of course, the public. The high ideals or integrity of these men are not questioned, but being human, they can hardly be expected to change their thoughts and habits and deal with wage claims in a judicial way. Mr. Randall is convinced that their failure to do so is largely responsible for the inflation and economic trouble which threatens to overwhelm us.

(5) Inspired by the recent generosity of the Transport Commission, the Central Electricity Authority has just conceded the largest wage increase the Central Electricity Authority has ever granted (i.e.—the 4d. an hour increase granted on February 10 this year). He had no doubt that the gas industry would shortly follow this example and others must do the same. The poor public will foot the bill.

(6) Extreme elements in certain unions always set their targets very high, and their use or threat of strike action usually leads to success. The saner leaders have to acquiesce in order to retain their members, and so moderation is thrown to the winds.

With regard to the point that employers must hold the balance between employees and the public, it is clear that this is right—otherwise the employer—even a monopoly employer—might not be able to sell his product because of its high price.



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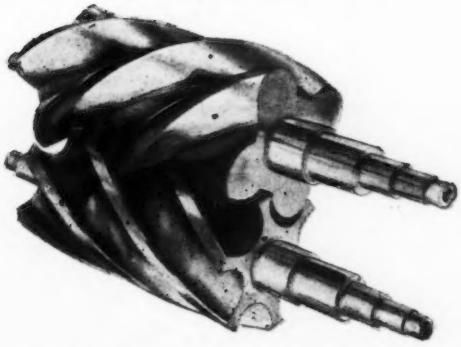

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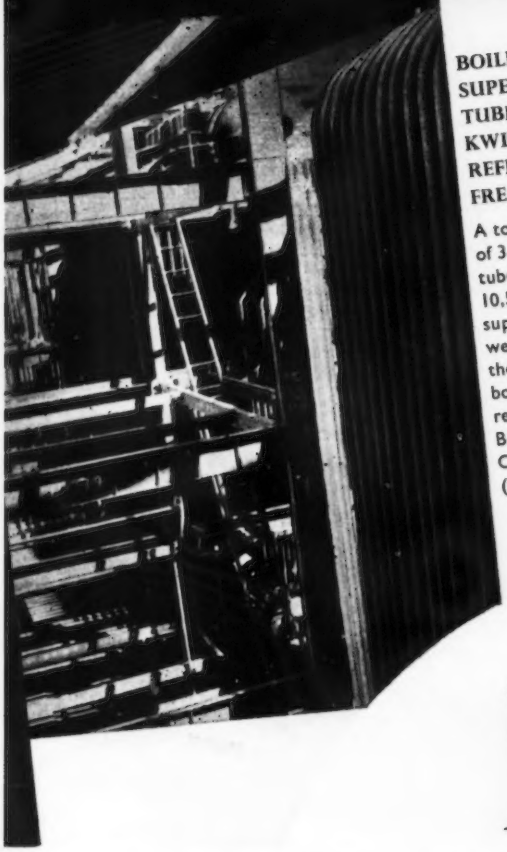

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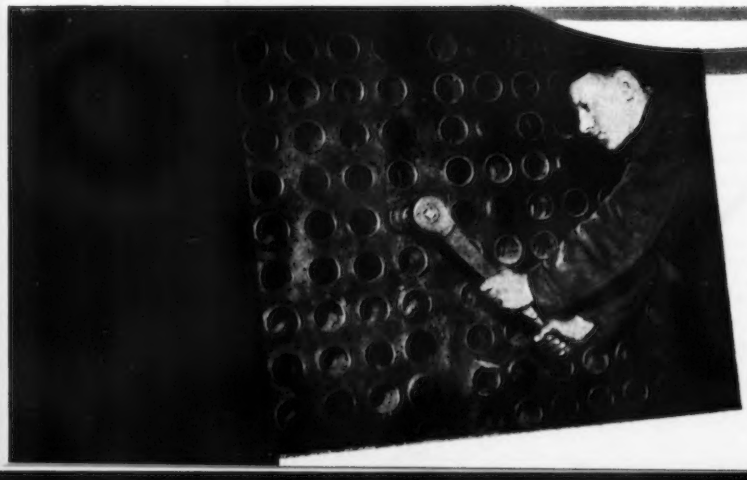

IN SHIPS' BOILERS

The main boilers of a ship being retubed with Stewarts and Lloyds' ERW tubes.

It is also true that the aggressive, often Communist-controlled unions seem to be getting too much their own way, and that the more moderate unions, fearing loss of membership, often have to follow their lead.

It is a generalization incapable of proof, however, that the nationalised industries are the spearhead of wage advances. It would be untrue, for example, of the gas industry and it would be generally untrue of the transport industry and of British European Airways and of the British Overseas Airways Corporation; although it is rather disturbing to find Mr. Hendy writing in 'The Times' on February 22 that 'trade unionists naturally expect a nationalised industry to pay more than private employers do.' The statement would require much further explanation to make it clear as to what he really means.

It is interesting to note in this connection the explanation given by the National Federated Electrical Association as to why they awarded a wage increase of 4d. an hour to 50,000 contracting electricians, the award to date from March 26, although earlier this year they had turned down a claim from the Electrical Trades Union for an increase of 6d. an hour. The statement said that the Association had been compelled 'to take into consideration recent wage increases granted by certain nationalised industries and in particular that announced by the electricity supply industry on Friday, February 10, amounting to 4d. an hour for all manual workers including electrical contracting operatives. The area boards of the Central Electricity Authority compete with private electrical contractors in this field, and in common with the majority of similar trades, the demand for operatives considerably outstrips the supply. As a result, operatives who have been trained by private electrical contractors at considerable expense are contracting from their employ to the area boards. It is upon that basis, and that basis alone, that the National Federated Electrical Association, after fully explaining the situation to the Ministry of Labour and seeking its guidance in the national interest has decided . . . . to award.'

About trade union leaders appointed on the employers' side—sometimes described as poachers turned gamekeepers—Sir Eric Coats, a former Deputy Chairman of the National Coal Board, thinks,[8] on the other hand, that 'former trade union leaders who have been appointed to high and medium positions in nationalised industries have handled wage and similar claims in those industries with remarkable objectivity and firmness.' There we have diametrically opposed views and the reader must choose between them.

Inflation

During the war, an article appeared in 'The Times'[9] which said, *inter alia*, that 'if free wage bargaining as we have known it hitherto is continued in conditions of full employment, there would be a continuous upward pressure upon money wage rates . . . . In peace-time the vicious spiral of wages and prices might become chronic.' That position has already been partly realised. It is largely due, first, to the action of certain employers in a restricted labour market in offering terms of employment greatly exceeding in real value the worth of the work done and of the responsibility assumed; second, by certain unions forcing certain employers by threats of strike action to concede increases beyond which the employers concerned can afford at existing prices. That is to say, there has not been enough proportionate increase in production relative to the increase in remuneration. As the Chancellor of the Exchequer said in his broadcast of February 24, 1956, we have paid ourselves 80% more money by increasing our production by a quarter.

Let us take two examples: Since 1947, the miners have increased their earnings by nearly £6 a week . . . . and dockers are 30s. or so behind.[10]

It would be interesting to look at some figures.[11] (Rough approximations.)

AVERAGE WEEKLY EARNINGS OF MEN (SHILLINGS)

	1947	1954	Increase
Agriculture	100s. 0d.	150s. 10d.	50s. 10d.
Railways	120s. 3d.	182s. 10d.	62s. 7d.
Shipbuilding	142s. 11d.	209s. 9d.	66s. 10d.
Coal	160s. 0d.	279s. 4d.	119s. 4d.

In his famous book,[12] Lord Beveridge has pointed out that there is no inherent mechanism in our present system which can with certainty prevent competitive sectional bargaining for wages from setting up a vicious spiral of rising prices under full employment. And he makes two suggestions. First, that the Trades Union Congress General Council should devote their attention to the 'problem of achieving a unified wake policy which ensures that the demands of individual unions will be judged with reference to the economic situation as a whole.' Unfortunately for this suggestion, however, the T.U.C. is largely an advisory body, and has little or no executive power to override the sovereignty of the individual unions affiliated to it. The second suggestion is that collective bargaining machinery in each industry should provide for arbitration by an agreed arbitrator, in default of agreement by reason and not by methods of strike and lockout. And the State should adopt a definite policy of stable prices. Unfortunately for this second suggestion, the State has not yet adopted a policy of stable prices; and where you have such a provision for arbitration in, for example, the coal industry, it has not prevented a spate of grievous strikes. What is wrong is a lack of social responsibility among too many parties in the employment market.

Revolt of the Middle Classes

The last main development in this field is the revolt of the middle classes. They have been defined[13] as 'all those people who work with their brains, and derive their income from salaries and professional fees or from active management of property, who do most of the organizing, inventive and creative work from which the nation gains its vitality. They may earn anything from £500 a year to the five-figure income of the big business executives or the handful of leaders of the professions. But the thread that unites them is social rather than financial. They contribute with brain, character and example. Like the service officer, they are always on duty . . . . They do not clock in or clock out.'

The case for a very large number of them was unwittingly put by the report of a court of inquiry into the dispute in engineering to which reference has already been made. 'The effect of rising prices,' said the report, 'is felt most acutely by those who have no margin in their incomes to enable them to bear any increases in the costs of the necessities of life. Those whose incomes are, for various reasons, fixed and are fixed at a low level, often have no way whatsoever, to improve their position, and for them inflationary tendencies and rises in prices may mean nothing less than deprivation.'

The leading article goes on to say that one visible effect is the number of outstanding young technicians who go abroad, and suggests that what is needed for the lower ranks is the end of inflation; and for the higher ranks, the urgency of pushing the point at which surtax begins and earned income relief ends well beyond its present £2,000-£2,025 level. Nothing has been done for the latter class, and it has left a feeling of hopelessness. What the leading article could have added is that there should be nothing political about this, for the middle classes are fed from the working classes as well as from the top ranks of society.

All these developments which we have discussed show urgent need of:

1. A policy of restraint in wages and salaries as laid down in Sir Staffords Cripps' White Paper of 1944 and under the same conditions.

2. Governmental action in the field of personal taxation on the lines laid down in the report of the Radcliffe Commission.

3. Governmental and employer and trade union action in eliminating restrictive practices both on the part of employers and trades unions.

We should then be well on the way out of our present state of inflation; and the whole of our economy would receive a belated and welcome infusion of fresh vigour and vitality.

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(1) By Lord Beveridge in letter to 'The Times', February 28, 1956.
(2) H. G. Wells: 'The Work, Wealth, and Happiness of Mankind', Heinemann, 1932, pp. 312, 313.
(3) Letter to 'The Times', February 28, 1956.
(4) Cmd. 9084.
(5) Cmd. 9352, 9372.
(6) Para. 10.
(7) Letter to 'The Times', February 13 and 15, 1956.
(8) Letter to 'The Times', February 16, 1956.
(9) January 23, 1943.
(10) and (11) Article in 'The Times': The Wage Scramble, February 20, 1956.
(12) Full Employment in a Free Society, George Allen and Unwin, 1944, p. 199.
(13) 'The Times' leading article, February 27, 1956.

Coke Symposium

South Western Section's Open Meeting at Bristol

IN order to consider further the 'Symposium on Coke', which could not be discussed following its presentation last November owing to lack of time, a special meeting of the Institution of Gas Engineers, South Western Section, was held in Bristol on April 18. The meeting was addressed by Sir Henry Jones, M.B.E., Deputy Chairman of the Gas Council; Dr. J. Burns, G.M., Chief Engineer, North Thames Gas Board, both authors of papers in the Symposium; and by Dr. F. A. Burden, Coke Laboratory, Watson House, who was co-author of a Symposium paper with Dr. F. J. Eaton, Deputy Manager, Watson House, who was unable to be present. The attendance totalled some 160 persons including representatives of nearly 20 interested bodies among which were the Coal Utilization Council, the Institute of Fuel, the Ministry of Fuel and Power, the National Coal Board, the National Industrial Fuel Efficiency Service, and the National Smoke Abatement Society.

After the meeting had been opened by Dr. A. Marsden, M.B.E., Chairman of the South Western Section, Sir Henry recalled that of the authors of the Symposium five were members of a panel appointed by the Gas Council, after the Government's adoption of a clean air policy following the Beaver Committee report, to investigate production techniques which would increase the quantity of gas coke available for sale. The key to the whole smokeless fuel problem was contained in a paragraph of his own Symposium paper, said Sir Henry:—

'The consumption of coal by domestic consumers was estimated by the Beaver Committee as 36.8 mill. tons per annum. Of this amount . . . 19 mill. tons are bituminous coal used in the "black" areas . . . which should be replaced by gas, electricity, and solid smokeless fuel. The policy of replacing this coal with smokeless fuels has been accepted by the Government.'

This bituminous coal would be replaced partly by gas and electricity, but mainly by solid smokeless fuel, Sir Henry continued, in a brief abstract of his paper. Some coke now used in industry could be diverted to the domestic market because coal or oil could be used with suitable equipment without smoke emission, but even so a considerable increase in coke production would be needed. It seemed likely that an additional 10 mill. tons of coal per annum might have to be carbonized to make extra gas and coke to help replace the bituminous coal now used in the 'black' areas. As a general rule the emission of smoke from a factory, especially black smoke, indicated gross inefficiency in the furnaces. In the home, complete avoidance of smoke emission could only be secured by the use of smokeless fuel. However, coke burnt in the open fire would give out much more heat than the same weight of coal, no more than 16 cwt. of coke being required to replace a ton of coal. This was as well because the process of converting coal into gas and coke was expensive and coke was bound to cost more per ton than coal.

More Could be Made

Smokeless fuel produced in this country was about 37½ mill. tons, of which about 25 mill. tons of coke were required for industry. Smokeless fuel going into the domestic market was a little over 6 mill. tons only. In the case of gas coke less than one third of the total amount made for sale was sold for domestic premises. A substantial extra quantity of gas coke could be made for sale by operating the plant at gasworks in such a way as to increase coke production without a proportionate increase in gas production. About 3 mill. tons more coal could be carbonized in gasworks without building new plant, making available for sale about 2½ mill. tons of additional coke and 300,000 tons of additional breeze.

Supplies of coals suitable for carbonization should be adequate and each ton of coal carbonized in a gasworks would, if the gas and coke were sold to domestic consumers, more than replace a ton of coal used by those consumers. The process of making an area smokeless would thus lead to a reduction in the total demand for coal. Coke used in place of coal must be of a quality to give satisfactory service to the user—the ash content must not be too high and it must burn reasonably freely—but for best results a modern type grate must be used in which to burn it. Over a ten-year programme it might be necessary to build each year works to carbonize additional coal at the rate of 1 mill. tons a year. Additional capital investment beyond that already allowed for in the gas industry's investment programme would be of the order of £12 mill. to £15 mill. per annum.

Largest Producer

'I have talked of gas and coke because those are the fuels in which the gas industry is interested,' concluded Sir Henry. 'It is expected that there will be some increase in the production of low temperature coke and other smokeless fuels by bodies other than the area gas boards but these seem likely to be comparatively small. At the present time the boards are by far the largest producers of solid smokeless fuel in the form of coke suitable for the domestic market. . . . The gas industry can and will play a very important part in the implementation of the clean air policy and in bringing about the ideal of clean skies over clean cities to which we all look forward.'

Explaining that his task was to set out briefly some of the factors which affect coke production and to deal with some of the methods by which the output of solid smokeless fuel could be increased with or without an attendant increase in gas production with plant now available, Dr. Burns followed with an abstract of his own symposium paper.

Mentioning the wide variations in the composition and constitution of coal, he pointed out that as far as coke production was concerned a limit was set by the fixed carbon content of the coal. The coal rank was of vital importance to coal throughput and coke production, for the lower the rank the higher the throughput. The size of coal also had an important bearing, the nearer the coal being to accurate grading the higher the throughput.

The calorific value of the gas, carburetted water gas production, and benzole extraction all had a very important effect on the amount of coke produced per unit of gas required. For example where no carburetted water gas was made the production of 5,000 therms of gas required 71.76 tons of coal with two gallons of benzole per ton of coal extracted from the gas and produced 34.01 tons of coke. Without benzole extraction the coal usage was 65.4 tons and the coke production 29.56. The corresponding figures for gas at calorific value of 450 were 61.62 tons of coal with two gallons of benzole producing 24.48 tons of coke, and without benzole extraction the coal usage was 56.28 tons and the coke production 20.65 tons. Thus in the production of 5,000 therms of gas there could be a difference of 10 tons of coke between one form of gas and another. Regarding the economics of these operations, where the coal/coke price ratio was 1 or less it paid to make gas of high calorific value, which gave obvious advantages on the distribution side.

Dealing with the problem of heating retorts with materials other than coke in order to make available more coke for the domestic market, Dr. Burns said he thought the tendency might be to develop means of heating retort settings by oil or by producer gas produced from non-caking coal. Unfortunately both these methods were only applicable to a setting designed for that particular type of fuel. The industry could still make

available quite an appreciable amount of coke by prohibiting its use for steam raising on works.

Having concluded the review of his own paper Dr. Burns gave a resumé and commented on that by Mr. W. Hodkinson on the application of the 'carrier' gas process to the production of solid smokeless fuel. The process worked more efficiently on graded coal of not too high a swelling number, and was unsuitable for gas of high calorific value, said Dr. Burns, and continued:

'This paper shows how one can very materially increase the output of solid smokeless fuel by using coal blue water gas, that is blue water gas made from coal as the carrier, but it will be remembered, however, that coal blue water gas can also be used as an external diluent for rich coal gas and in our fundamental assessment of this matter we should not forget that the carrier gas, or the Rochdale process, does not increase the amount of coke available per unit of gas produced.

'If one is producing 450 gas, either by the straight process or the "carrier" gas process the amount of coke produced per unit of gas requirement is essentially the same and it is less than the amount of coke produced per unit of gas requirement at 500. What the Rochdale, or "carrier" gas, process does do is to give a higher throughput of coal and hence a higher yield of coke per unit of retort setting, and it affects the capital charges of the operation rather more than the material balance.'

Dr. Burns then gave an appreciation of the joint contribution to the symposium of Messrs. W. R. Branson and E. T. Pickering on the carbonization of low rank coals in continuous vertical retorts. They had shown that it was possible to produce very reactive cokes from coals of Rank 800 and 900, said Dr. Burns; but the picture displayed on the economic side was not a very bright one. The low calorific value of the gas produced and the low thermal yield made it necessary to charge considerably more for this coke in order to produce gas at the same cost as under normal conditions.

Simultaneous Work

'Mr. Branson and Mr. Pickering quite clearly describe this work as preliminary and I think it may be worthwhile mentioning that simultaneous work was being carried out on a somewhat larger scale in my own Board and the results of these trials are now available,' continued Dr. Burns. 'They are, in fact, now published in a paper to the Conference on the Special Study of Domestic Heating in the U.K.—Present and Future, to be held by the Institute of Fuel on May 1 and 2.

'Full-scale trials, on the basis of 450 tons of coal per day, have been carried out and one striking feature is that in all cases in the carbonization of 800 Rank coal we were able to produce gas of over 500 B.Th.U. The greater throughput of coal compensates for the lower thermal yield per ton and in actual fact the thermal yield of gas per retort house per day is increased and the output of coke is materially increased. While it is not opportune to talk at length of this work, it is clear that the work described by Mr. Branson and Mr. Pickering has some very real interest for the future, and I think these gentlemen would be the first to say when they had written this paper that there is still a very large amount of work to be done on the subject.'

Dr. Burden then discussed the Symposium paper on coke quality and appliance performance which he contributed with Dr. Eaton. The design of the grate and the quality of coke were complementary to each other, he said, and the design should be such that it would burn coke of the degree of combustibility which could in practice be made.

After mentioning local difficulties experienced in coke production due to availability of high rank coal only, Dr. Burden said it was not easy to give a technical assessment of coke quality. Fundamentally a good coke was one that resulted in a satisfied consumer. This standard varied in different parts of the country, but speaking generally the consumer demanded ease of ignition, rapid recovery after refuelling, long burning at a low rate when required, and preferably a bright fire. The last factor could be satisfied by most gas cokes burning at maximum rate. The most important factor was ease of ignition, with which rapid recovery could be coupled. This factor was covered by a fire performance test, which, though not ideal, must be considered the most satisfactory now available. The various physical and chemical properties of the coke surface might yet provide a better method for measuring coke combustibility.

It was, however, possible to obtain more detailed information on the satisfactoriness of the coke supplied by the review of accumulated data on coke complaints. The most frequent complaints were of breeze, followed by sizing, shale, complaints due to faulty appliances or operation, reactivity, and moisture. If these were taken in conjunction with the records of coke sales, and with relevant plant data and the results of works control tests, useful information was obtained on the quality level demanded by the consumer, and on the steps required to improve quality. Even the study of the less justified complaints showed the importance of consistency of quality to the consumer, and it might be in the interests both of the industry and the consumer to improve consistency, even at the expense of some down-grading of the performance of the most reactive cokes, though improvement of the poorer cokes was essential. Dr. Burden asked for opinions and comment on this point.

Given a Bad Name

Coke had too often been given a bad name because it had been burned in unsuitable appliances, he continued. Education of the public in its use was necessary, and every new coke consumer should, ideally, be visited and given advice, particularly in smokeless zones where there might be prejudice against a compulsory fuel. Unfortunately the inefficient open fire had primarily to be catered for. The openable and closed stove, which provided better performance, were slowly but steadily gaining popularity, and merited the greatest possible encouragement both in the interest of efficient heating and of easing the general fuel supply position.

'Finally, one great problem remains to be solved,' Dr. Burden concluded: 'The Beaver Committee recommended the formulation of a British Standard Specification for domestic coke, and the Committee is now in operation. It remains to agree the general quality level for such a specification, which, while being realistic in relation to present production, must not be too low nor so wide that complaints arise from lack of consistency in "specification" cokes. In a scheme of several quality grades there are great technical advantages but serious commercial difficulties, and in the whole question much food for thought and discussion.

'The consumer who is used to coal will naturally at first prefer a fuel with similar characteristics, and this implies the use of the most free-burning cokes available, the supply of which is limited. They are, however, not essential to obtaining a fully satisfactory performance, and the key to the problem would appear to be consistency of fuel supplied to any given consumer, together with adequate instruction in its use. The importance of these cannot be over-emphasized.

DISCUSSION

Opening the discussion which followed, at the invitation of Dr. Marsden, **Mr. James Carr,** O.B.E., Deputy Chairman of the South Western Gas Board, recalled that the London and Counties Coke Sales Circle held a Conference on March 6 and listened to two addresses given by Dr. G. E. Foxwell and Mr. R. S. Johnson.

'Dr. Foxwell dealt very fully with the "Clean Air Bill" and Mr. Johnson with "Coke and Its Place in the Future," and both papers are worthy of very careful study,' continued Mr. Carr.

'Quoting from Dr. Foxwell's paper on the provisions of the Clean Air Bill,' he went on: '"It is recognized that to comply with the requirement to burn only authorized fuels, the owner or occupier of premises in any smoke control area will probably have to fit new appliances. If he does so, and if the expenditure is incurred with the approval of the local authority and is carried out to their satisfaction, a substantial contribution to the cost will be made, the total cost being divided in the proportions, owner or occupier, not more than 30%; local authority, not less than 30%; and the Treasury, 40%. (The local authority is empowered to pay more than 30% of the cost if they desire to do so)."

'Dr. Foxwell goes on to say: "Since *authorized fuels* will include all the fuels covered by the Solid Smokeless Fuels Federation *and* gas and electricity, it is evident that the domestic heating services will not be met by coke alone, or even by solid smokeless fuels. The provision of fuels and appliances for a smoke control area must be a combined operation. It can be shown that modern conditions can be most effectively met by a combination of solid fuel and gas, with electricity for certain purposes, excluding space heating."

'My own thoughts on these provisions are that the owner or occupier will receive financial assistance when installing a coke-burning appliance, but I am not too certain it will be forthcoming when a gas-burning appliance is installed for space heating, as the sale of those appliances is not mentioned in the Bill, and is, in fact, discouraged by heavy purchase tax.

'In order to assist the owner or occupier I sincerely trust that *all* appliances installed to comply with the Clean Air Bill in a town that has been scheduled will be subsidized and that appliances so installed will be exempt from purchase tax. One of the reasons for the decreasing sales of gas fires has been the imposition of the high purchase tax.

'Mr. Johnson in his talk said: "If people are full of resentment with regard to the Clean Air Bill it will mean that there will be no advertisement for any extension of the idea. If we get one smoke control area in the country which is a real success the people who live in it will advertise it for us and the idea will then grow." This assumes that it has not been too costly to the householder to make the necessary change in his fuels, and that he does not have an increase in rate charge, or increased taxation.

'It is appreciated that the householder cannot have clean air without it costing something but let us try and plan to keep the cost down to the minimum. Let us assume that our installation cost for an appliance to burn an authorized fuel is reasonable, the next two points are the correct appliance and the right type of fuel to burn in it, if it is a solid fuel appliance.

'Many householders have experience of a gas ignited coke grate of approved type, capable of burning well prepared gas coke, economical in use and giving out the required heat, and not requiring continual attention in order to function well. The coke must be low in ash and moisture and of the correct size, be readily ignitable, and free from shale. I am speaking from personal experience as I have not burnt any coal in my own home for the last 22 years, using coke for my hot water and radiators, and a gas ignited coke grate in my lounge and gas fires in all other rooms.

'In the gas industry for a long number of years we have given demonstrations in the use of the gas cooker, and have assisted the housewife in the selection, preparation and cooking of her food. Have we ever given a public demonstration in the correct way to operate a gas ignited coke grate? The individual salesman has sold thousands of coke grates from the one in operation in the showrooms. This particular grate was alight and burning up well before the showrooms opened to the public. Other coke grates on show have been dismantled and the construction explained, etc. We have also displayed coke of the correct size suitable for burning in a coke grate.

'It is time we fixed up a demonstration which would show the householder a first class gas ignited coke grate, the correct sized suitable coke for burning on it, and the correct method of charging a coke grate in order to ignite in approximately 12 minutes after turning on the gas. We should also measure the amount of gas used for the ignition of the coke, show how the grate can operate on low heat by the air control mechanism, and demonstrate the ash removal and cleaning of the grate. Above all, we should let the audience appreciate the heat given out from a correctly operated coke grate, and explain that by burning coke the question of chimney sweeping is a thing of the past. Such a demonstration would not take any longer than an ordinary cookery demonstration, and the usual gaps could be filled in with other suitable diversions, short films, and the like.

Saving Effected

'In the symposium reference is made to the figures supplied by the area boards of additional coke available by the reduction of water gas manufacture. On the question of increased coke available, I carried out an experiment with the Bristol Gas Company in 1947 on two water gas plants when low volatile (anthracite) cobbles were gasified along with coke in the proportion of one-third cobbles and two-thirds coke. At the time we were particularly short of coke and we saved per day on the water gas sets capable of making 3 mill. cu.ft. approximately 33% of coke.

'At this particular time low volatile cobbles were much cheaper than the then existing coke price. On reviewing this position at today's prices I find that low volatile Welsh cobbles delivered into two of the Bristol works are still a little cheaper than coke and assuming that good quality gas coke was being used on the generators it would be possible to make a coke saving internally by substitution of a percentage of low volatile cobbles. At the present time the coke used on these two C.W.G. sets is made from coal supplied from the Somerset coalfields which is inferior gas-making coal, and it is doubtful whether there would be any advantage in making the change. It is the Board's policy to destroy this inferior coke on the C.W.G. plants.

'Taking the annual coke consumption of 1.5 mill. tons for water gas manufacture, this could be reduced to 1 mill. tons by the substitution of ½ mill. tons of low volatile cobbles, releasing ½ mill. tons of coke for the domestic market. From a practical point of view I should add that the mixing of the low volatile cobbles and the coke charged into the generators requires careful supervision, but it can be done with good results.

Use of Gas Heat Retorts

'Dr. Burns in his paper, when dealing with the question of coke for heating retorts, referred to the question of replacing some of the coke used in the producers by coal gas.

'Mr. L. P. Ingram, the South Western Gas Board's Chief Engineer, has recently carried out a series of experiments on an I.V.C. chamber installation having a capacity of 400,000 cu.ft. per day This particular carbonizing plant has a very high consumption of coke for heating the chambers, and with this in mind this plant was selected for the test, also it is operating on a very low load factor. Coal gas was fed to the producers at about 38% of the heating requirements of the chambers. The plant was operated for 12 weeks without coal gas firing, and then followed 12 weeks with partial coal gas firing, with the following results:—

'Without coal gas firing—Coal used, 537 tons; therms per ton made for sale, 78.8; coke to producers, 164 tons (6.11 cwts. ton coal carbonized); coke and breeze available for sale, 251 tons (9.35 cwts. per ton coal carbonized, 46.75 tons per 100 tons coal carbonized, and 5.93 tons per 1,000 therms made for sale). Average net cost of coal 13.3d. per therm made for sale.

'With partial coal gas firing—Coal used, 775 tons; therms per ton made for sale, 58.1; coke to producers, 129 tons (3.34 cwts./ton); coke and breeze for sale, 470 tons (12.13 cwts. per ton of coal carbonized, 60.65 tons per 100 tons coal carbonized, and 10.44 tons per 1,000 therms made for sale). Average net cost of coal, 10.5d. per therm made for sale.

'One point which has not been particularly stressed in the "Symposium on Coke" is the amount of coke used on the producers for retort heating. It is an old saying in the gas industry that you cannot make cheap gas without a good coke available for sale figure, and I think it is very true today. The Industry carbonized 27 mill. tons of coal and the coke available for sale is 12 mill. tons.

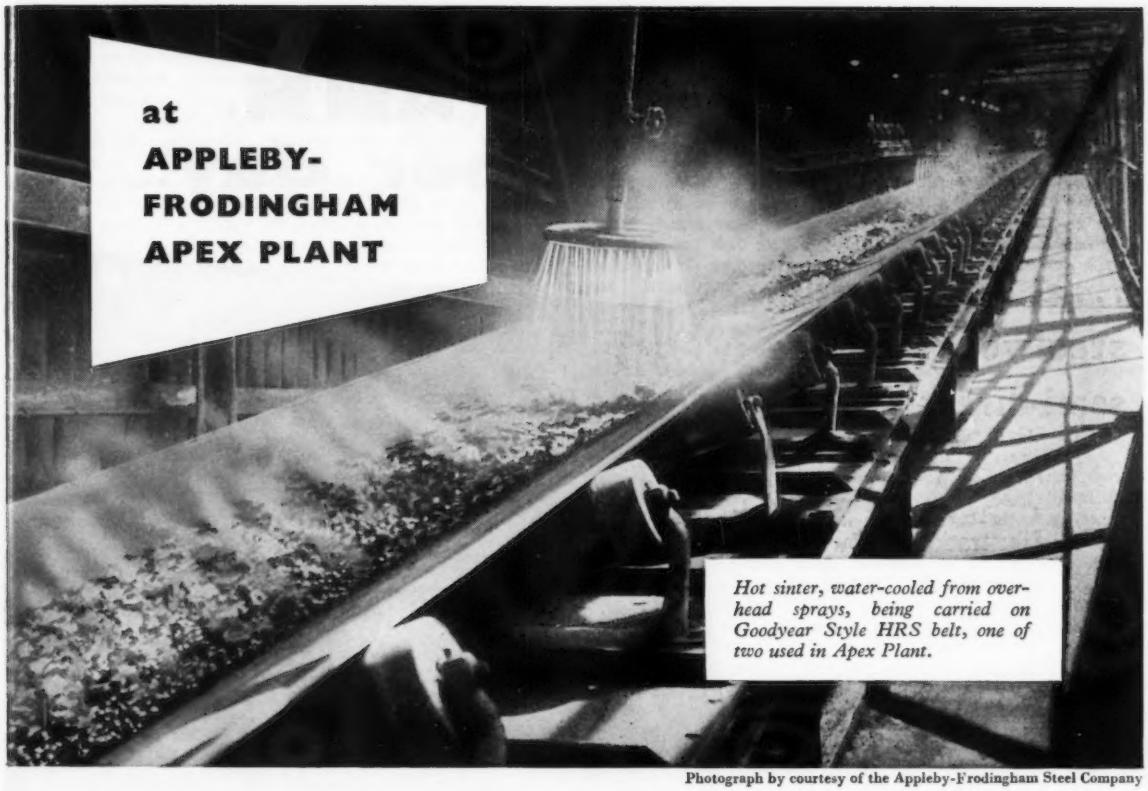
'Dr. Burns gives a figure of 4 mill. tons used each year in producers for retort heating purposes and on 27 mill. tons of coal carbonized this is 3 cwt. per ton of coal carbonized, which I consider is an all round very poor figure. Assuming we, as an Industry, could carry out this job with 2½ cwts. per ton of coal carbonized we should have available a further 625,000 tons of coke.

'I am not suggesting that we are any worse or any better in this connection in the area of the South Western Gas Board, but we did take over undertakings which were using up to 6 cwt. of coke per ton of coal carbonized. These, fortunately, have now all been closed down and the individual works are integrated with larger stations. On a number of these large stations we are getting figures of 2.2 and 2.24 cwt. per ton of coal carbonized and we have made a very considerable saving in the fuel used on producers during the last five years. Our figures are of interest for coke consumption on producers for the year 1950-51, compared with 1955-56.

	1950/51	1955/56
Coke	3.44 cwt.	2.83 cwt.
Breeze	—	0.19 cwt.
	3.44 cwt.	3.02 cwt.

On a coal carbonized figure of 1.6 mill. tons per annum:—

Coke and breeze used at 1950 rates	275,200 tons
Coke and breeze used at 1955 rates	241,600 tons
Saving	33,600 tons
Breeze substituted for coke	15,200 tons
Additional coke available	48,800 tons



Hot sinter, water-cooled from overhead sprays, being carried on Goodyear Style HRS belt, one of two used in Apex Plant.

Photograph by courtesy of the Appleby-Frodingham Steel Company

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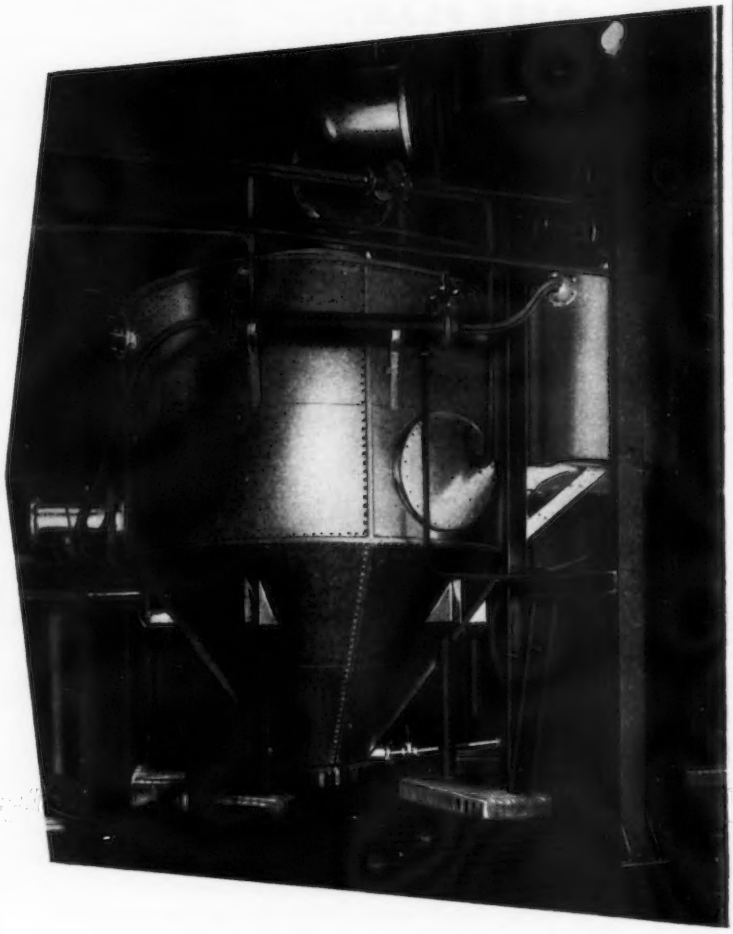

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'On annual saving of £244,000 Dr. Marsden and his staff have carried out continual fuel efficiency surveys for the last five years, and as a result of these surveys the above savings have been achieved. This economy was one of many which enabled the Board to retain its gas prices static for a period of three years. I feel that the industry does not pay enough attention to this particular problem—the amount of coke used per ton of coal carbonized.

'In my younger days,' concluded Mr. Carr, 'when carrying out the duties of a technical officer on retort house control and management, I was very seriously on the mat if the coke figure was in excess of 2½ cwt. per ton of coal carbonized, and I might add that there was no second chance given to the individual unless the coke figure was reduced and economic working obtained. Our young technical assistants cannot have this particular point stressed too often, as I still contend that a large portion of the profits of the undertaking are made in the retort house.'

Replying, Dr. Burns agreed that bastard anthracite could be used in c.w.g. production but pointed out that the cost was high. He also agreed that figures of coke used per ton of coal carbonized were poor. The average for the country was 3 cwt. while in ideal conditions it could be reduced to 1.9 cwt. per ton.

Many Practical Problems

Mr. F. J. Redstone, Chief Sanitary Inspector, Bristol, and Chairman, National Smoke Abatement Society, congratulated the Institution on calling the meeting to discuss the supply of coke, which, it would be recognised, was the fuel on which so much depended if smoke control legislation was to achieve success.

'That there are many practical problems involved in seeing that the supply of smokeless fuels is adequate is obvious,' he continued, 'and it seems to me that the adequacy of supply is something which should be reasonably co-ordinated so that we may prevent the situation of smoke control areas being established with a lack of requisite fuels in the quantity and quality required.

'It seems reasonable to assume that more and more industrialists and domestic users will look for smokeless fuels so as to limit the human element which can give rise to nuisance and violation of the legal standards, and I would ask the speakers whether, in their opinion, there is a plan to organize the carbonization of additional coal in new plants to meet rising demand.

'My second point is, in view of the increasing use of oil in the gas industry, and the proposed use of natural gas supplies, whether there is likely to be a diminishing quantity of coke available and if this is so, what thought has been given to meet such a situation.

'I raise this particularly as Sir Henry Jones in the Coke Symposium said that "although some additional coke can be made available for sale without the carbonization of additional coal . . . . only by additional carbonization can really substantial additional quantities of coke be placed on the market." And it should be noted this is a most important conclusion fully in line with views expressed in the Beaver Report.

'One further point which might be given some attention is towards the renaming of this fuel. At the present time one would agree that there is little imagination about this name, which is not attractive to the consumer, and the gas industry might well think up a new trade name, more in line with modern marketing technique.

'After all, the success of the clean air campaign will depend to a great extent on people being satisfied with the results obtained from smokeless fuels. One difficulty experienced in many houses and flats is, of course, the lack of storage space for this more bulky fuel and attention should be given to this or more frequent deliveries will be called for.

'My final point is this. We know that the gas industry has done much in recent years to extend the use of gas for industrial purposes, and this, of course, has been of great benefit to the condition of the atmosphere. Would it be possible to increase the availability and use of gas for industrial purposes so as to synchronize as far as possible with the increasing demand for coke thus helping towards the solution of what is going to be a very real problem?'

In reply Sir Henry said that the position regarding supplies of smokeless fuels would become clearer after the Clean Air Bill had become law. Carbonization of coal could be doubled with existing plant. In so far as increased use of oil and the possibility of the use of natural gas affecting coke production was concerned, the gas industry had an obligation to make gas but not coke, and if it could make gas more economically without using coal, the outlook for coke was poor. But if the most economical means of making gas for the base load was with coal, there would be more coke. It all depended on the price of coal, what the public would pay for coke, and the price of oil—and if it became available—natural gas. He agreed that a new name might, indeed, be found for coke, but suggested that they did not use the Scottish appellation—cinders! He agreed that the question of storage was important. Much time had been devoted to the devizing of suitable storage bins, but in new property there was no excuse for inadequate storage facilities. Regarding Mr. Redstone's final point, the use of gas for industry was being pursued and sales were increasing. This was favourable to increased coke production.

Mr. W. C. Moss, Technical Manager of the Coal Utilization Council, said that he was interested in all solid fuels including coke which he liked. He stressed the difficulty of persuading people to use coke appliances, and said that though many would have to use bituminous coal for a good time to come, they should install appliances capable of burning coke. Regarding storage and delivery problems, he suggested that gas boards might make more use of the coal merchant when stocks were piling up and give them special assistance in times of shortage. In some localities there was lack of co-operation; some merchants were still biased against coke, and should be made to appreciate its advantages. Regarding the moisture problem, he had seen anthracite stored under cover in the Netherlands—could coke not be stored under cover in Britain? Did the gas boards offer coke to merchants at attractive summer prices which might encourage them to build up stocks and erect shelters for them? He agreed with Dr. Burden on the importance of consistency in quality of coke and of ease of ignition and recovery after refuelling. He considered that thermostatic control of domestic boilers was of considerable value.

Not So Serious

Replying, Sir Henry said that if coal merchants were biased against coke they had to bear in mind that in smoke control areas there would be no coal for them anyway so that they had better start thinking about coke. The question of summer prices was receiving attention although results had not been promising. Regarding the covering of coke, it was perhaps cheaper to buy a little water with your coke than to pay for a Dutch barn for the merchant to store it under. Dr. Burden bore this out and said that the problem of moisture in coke was much less serious than generally believed. Snow was the worst offender. Sir Henry agreed on the value of thermostatic control of domestic boilers.

Mr. J. W. Denton, G.M., Engineer and Manager, Torquay Exeter Division, stressed the importance of the recovery of sulphur by the gas industry.

Mr. C. R. Ingham, Bristol, recalled that in the film 'Animal Farm' the pig said that all were equal but some were more equal than others. In the same way, all coke was good but some was more suitable than others. The lower quality coke was good fuel. All coke was carbon, but the arrangement of the molecules differed so that some types were more reactive than others. It was, therefore, important to see that the right type was used for the right purpose. He agreed on the need for adequate storage and for the development of increased use of coke and gas side by side.

Mrs. Rossiter, of Mangotsfield, said most housewives hated coke. They would burn coal if they could and expected coke to be cheaper. They also disliked the inconvenience of its storage as compared with coal. 'If you can put it over to women that with their new grates they can burn coke efficiently and light it easily the new smokeless areas we hope for will become realities,' she concluded. Sir Henry suggested that the housewife also hated soot. His wife, he said, liked coke, and he knew of a housing estate where the use of coal was prohibited, and where, after the proper use of coke had been explained and the people had got used to it they would not go back to coal.

Mr. Curtis, of Kingford, complained that the price of coke had increased sixfold, and wanted to know whether production costs had gone up correspondingly. Sir Henry said he could not answer this but could say that whereas coal gas used to be the cheapest to produce it was now the most expensive, oil gas being cheaper.

Mr. J. Foxton, Cheltenham, said that laboratory tests in connection with alleged poor coke performance frequently showed that a faulty appliance was to blame. Sir Henry said that new users of coke should be visited so that coke was not blamed where faulty installation and indifferent appliances were the cause of trouble.

A Housewife, who did not give her name, agreed that there was a prejudice against the name, coke, and questioned whether it could be lighted in houses where gas was not available. Sir Henry and Dr. Burden confirmed that it was possible to light coke with paper and sticks, but pointed out that gas was available in most cases and was preferable in that it made no smoke.

Mr. Austin complained that while a big coke fire was satisfactory a small one went out. This had caused so much inconvenience in his home that he now used logs. Sir Henry suggested that his grate should be examined.

Mr. Smith complained of headaches due to carbon monoxide poisoning when sitting in front of a bright coke fire. He asked whether coke should stay in in an all-night grate. Sir Henry said that there was no more reason why a coke fire should emit CO fumes than a coal fire; the point was that one saw a coal fire smoking and did something about it. Dr. Burden pointed out that when a fire was burning brightly CO emission was at a minimum; Mr. Smith's headaches were due to the greater radiation of his coke fire. Both he and Sir Henry agreed that coke should stay in satisfactorily in an all-night grate. Using an appliance on the Gas Council approved list coke should stay in for ten hours.

Mr. Heath questioned whether coke, in effect, subsidized gas. Dr. Burden said that gasworks were operated as economically as possible and economic rates were charged. He did not think coke was over dear; if it were coal gas would be the cheapest instead of the most expensive gas to produce. In reply to a further question, Dr. Burden said that low rank coal produced weak, friable coke which was more combustible and free burning.

Mr. C. H. Chester, Chairman, South Western Gas Board, said that the speakers had answered the questions put to them so fully that there remained little for him to say. He would, however, emphasize that the area boards planned alternative methods of coke making. There was no shortage of coke and more could be made. Demand was increasing, and in his area 70,000 to 80,000 tons more had been sold than in 1949. Integration of gas undertakings had allowed the installation of grading facilities and the closing of inefficient undertakings bringing an end to the supply of bad coke and gas alike. He could not accept the complaint that there was lack of co-operation with dealers. Referring to what Mr. Redstone had said, he felt that the synchronizing of coke and gas development was within their scope and that they had a reasonable answer to meet their commitments under the Clean Air Bill.

Winding up, **Dr. Marsden** said that there would be no Utopia overnight. The technical man was aware of what had to be done but the public had to be willing and opposition overcome. There had been much criticism over nationalisation generally including the gas industry, but fundamentally the industry remained unchanged, its constant aim being to provide the best possible smokeless fuel. All must co-operate toward this aim. Opening the Clean Air Exhibition at Charing Cross recently, Mr. Duncan Sandys, Minister of Housing and Local Government, had said that it was the Government's policy to eliminate air pollution but that not everything must be left to the Government. We must all co-operate.

Importance of Technical Education

IN his address to the Institution of Chemical Engineers in London yesterday, Mr. John A. Oriel, C.B.E., President, spoke of a 'great awakening to the value and the need for technical developments and, in particular, for technical education' which had occurred in this country recently. 'The Government now appears ready to do all it can to make up for what we know to have been a gross error of judgment over many years,' he said.

'It is archaic that our largest industries—by which I mean our nationalised industries—highly technical in character, are controlled by men without technical knowledge and by retired soldiers. When there are such great technical improvements at hand, it is regrettable that we should not have at the head of affairs, men with technical imagination capable of inspiring those who are attempting to work under them.'

Discussing the relative position in the U.S.A. and the U.S.S.R., Mr. Oriel continued: 'At the last Soviet Grand Council a phrase frequently repeated was "peaceful invasion." This peaceful invasion is undoubtedly to be carried out by giving technical assistance to undeveloped countries. There is nothing that undeveloped countries want and like more than "know-how" and the country which supplies "know-how" also supplies equipment and eventually has a tremendous influence over the country which it aids.

'We do not, of course, wish to follow the Russians in forcing men to adopt scientific or technological careers, but we can hardly say that we do not force men at all. We are at present forcing all our graduates, whom we need so badly, into two years of National Service. It is clearly foolhardy to allow men who have been chosen on account of their ability for special training in science and technology to waste two years at a time when they are so badly needed at home and abroad working in their own profession. In this way our Government has not yet fully grasped the seriousness of the situation.

'I believe that our influence has been considerable in bringing about progress. The proportion of boys reading science at our public schools some four or five years ago was about 40%—it is now at least 55%—whilst in our grammar schools there are in some cases as many as 80% reading science in the sixth forms. Here, of course, the great need is for more teachers and I believe that the shortage will gradually be overcome. Strenuous efforts are being made by industry to assist science teachers in many ways. The Royal Institution too is encouraging those who are already in the profession.

'The quality of the scientific research of our universities is acknowledged the world over and the freedom which they enjoy from politics and governmental supervision seems to be unique in the world. The universities, with the aid of the University Grants Committee, are developing their scientific and technological departments at a very great speed. To set up an entirely new grants committee, which has been suggested, would not in my opinion increase this speed and might prove to be disruptive.

'If there is one way in which our universities are failing at present—and this criticism might well be levelled more at Oxford and Cambridge than other universities—it is that they hang on to their graduates for far too long. The normal period of undergraduateship of three or four years is in most cases long enough for a man before moving out into industry or teaching. The universities should retain only a very small number of those who have obtained their first degree and assure themselves before retaining them that they are really men who can benefit by a period engaged in research.

'Others who clearly would make first grade technologists, who would become our leaders in the development of technological projects, who appear most capable of translating scientific discovery into practical propositions, should move on to a new college where they would receive postgraduate technological education. This college should also be open to men who have already spent from two to five years in industry.

'Still, it is in the realm of the technical colleges that the greatest advance in planning has been made in the past year. The Government has decided to spend considerable sums of money on these colleges, the purpose being not only to increase the quantity but also to keep the quality high. We in our various walks of life, whether as teachers, research workers, or managers in industry, must do all we can to see that this new scheme is a success.

TRADE NEWS

Development of loading shovels

Two new loading shovels—the 'Brayloader BL 30' and the 'Dualoader DL 35'—were demonstrated to the Press recently.

The 'Brayloader BL 30' is a front-end loading shovel employing a standard 1 cu. yd. bucket and has a safe working load of 25 cwt. The cab and the engine cowling have been moulded from 'Polyester' resins reinforced with 'Fibreglass,' said to ensure greater strength than that obtainable with mild steel plate. There are no dangers of rust or corrosion. Condensation is reduced and sound dampening should lessen the possibility of operator fatigue. The material has a high impact strength, is light, and both cab and cowling are easily removed.

A Ford diesel power unit developing 42 B.H.P. at 1,750 r.p.m. with a speed range of 1.86 m.p.h. to 11.8 m.p.h. is carried free from stress or strain within the mainframe of the shovel. With a heavy, fully oscillating solid front axle, ultra heavy duty stub axles, and with oversize wheel bearings the loader has great strength.

The hydraulic power of the 'Brayloader BL 30' is provided by a newly-developed gear type pump delivering approximately 31 gal. at 1,750 r.p.m. and driven from the engine crankshaft by means of double universal couplings. While the engine is running, oil is constantly circulating through the whole hydraulic system.

Lifting power for the booms is provided by the 4⅛-in. diameter main jacks which, anchored to the rear of the mainframe, lie horizontally when the booms are down. The double acting 3-in. diameter bucket jacks with chromium plated piston rods are operated by one lever that commands the whole hydraulic assembly, ensuring control of the bucket and 'power crowd.'

The angle of presentation of the bucket cutting edge is varied at will within a wide arc and the tasks of digging, dozing, stripping and backgrading are simply carried out.

The 'Dualoader DL 35,' with its dual capabilities of front-end and overhead loading, employs as standard a ¾ cu. yd. bucket and has a safe working load of 20 cwt.

The main boom of the 'DL 35' pivots on a centrally positioned A-frame constructed so that there is no requirement for modification or adjustment when front or overhead loading. The double acting 5-in. diameter main jacks with chromium plated piston rods incorporate a hydraulic shock absorber.

The importance of stability in an overhead loader has been recognized, say the manufacturers. As additional ballasting the front and rear inner tubes are 100% filled with a solution of calcium chloride—this solution being so constituted to prevent freezing in the coldest of local conditions.

Above: *The 'Brayloader BL 30.'* Right: *The 'Dualoader DL 35' suitable for front or overhead loading.*

It is suitable for work in confined conditions where manœuvrability is restricted.

And its multiplicity of purpose is further increased by the availability of a bulldozer blade, a snow plough, a crane attachment and a fork lift both of which are supplied with an audible and visual warning device, and digger teeth for the bucket.

One feature is common to both loaders—controlled discharging.—*W. E. Bray & Co., Ltd., Faggs Road, Feltham, Middlesex.*

'In-situ' meter testing

The accurate testing of gas meters 'in-situ' has always presented problems. The chief difficulty has been to find a really satisfactory method of testing, bearing in mind that the facilities which can be reasonably made available on site cannot be those of a meter testing department.

In these circumstances, the Wales Gas Board undertook research and experimental work into the relative merits of using portable test meters and governed and calibrated burner assemblies for this purpose; and the following resultant points are of note:—

(1) When using a portable test meter, large errors may arise through differences in temperature between the test meter and the meter being tested, but changes in specific gravity do not affect the accuracy of the test.

(2) Any inaccuracies in the test meters are transmitted to the meter being tested. Consequently, it is necessary to check the test meter at regular intervals against a test holder or large capacity wet meter.

(3) The equipment is bulky and needs to be handled carefully. Normal systems of calibrated and governed burner assemblies can only be used at small rates of flow and cannot be used for 'capacity' tests.

(4) Inaccuracies due to temperature changes are reduced to a minimum but changes in specific gravity do affect the accuracy of the test.

(5) A change in specific gravity of 0.01 gives an error equivalent to a change in temperature of 10°F., this error being slightly in excess of 1% fast or slow in the 'meter percentage error' charts.

With these considerations in mind, an experimental instrument has been developed in collaboration with Meters, Ltd., using calibrated and governed jets with a far greater range of flow than the normal burner assemblies.

The operation of the instrument depends upon the fact that, when gas of constant specific gravity is passed through a fixed orifice at a given pressure, the quantity of gas which issues from the jet is in direct proportion to the time taken to pass that amount.

The only variable which cannot be controlled is the specific gravity. The pressure at the jet is controlled by a governor and the jet itself is non-variable, being of fixed dimensions. Thus the quantity of gas issuing from the jet

in any given time can only vary if the specific gravity varies.

If a jet is calibrated to pass 100 cu.ft. of gas per hour at a pressure of 2 in. W.G. and of a definite specific gravity, the time taken to pass 2 cu.ft. will be 72 seconds. The conditions remaining constant, the time taken to pass a specified quantity of gas or conversely, the quantity of gas passed in a specified time, can be calculated.

However, if the specific gravity changes, the quantity of gas passing through the jet in any given time will also change, since the quantity of gas passed varies inversely as the square root of the specific gravity.

Meter percentage error charts in terms of 'time' are prepared, a separate chart being provided for each difference of

Experimental portable meter tester of the Wales Gas Board.

0.01 specific gravity, covering the range of specific gravities likely to occur in a particular undertaking. The meter tester is given the specific gravity in the morning and again in the afternoon to enable him to refer to the appropriate chart; or alternatively, he makes a note of the times at which tests are carried out and the necessary corrections are made at the undertaking's headquarters.

From a number of careful tests, the relative merits of the two methods are as follows:—

Advantages of the Board's meter tester:

(a) When the practical tests were carried out, all consumers' meters were tested against both the Board's meter tester and the portable test meter, and then against a test-holder. A greater percentage of correct results were obtained with the Board's meter tester.

(b) Maximum error less than that obtained with portable test meter.

(c) Equipment less bulky and more easily carried. Approximate weight is 20 lb.

(d) Tests can be efficiently carried out by one person.

(e) Variations due to temperature differences reduced to a minimum.

(f) Only maintenance required is to ensure jets are kept clean.

A disadvantage is that results are affected by changes in specific gravity.

The advantages of a portable test meter is that results are not affected by changes in specific gravity.

Its disadvantages are: (1) The equipment is bulky and must be handled carefully; (2) the test meter needs frequent checking against test-holder; (3) results are affected by difference in temperature between the test meter and the meter being tested.

The portable meter tester made by Meters, Ltd., in collaboration with the Board is shown in the photograph. It comprises: Control cock (Saunders valve); spring-loaded adjustable governor; main jet holder; 'controlled' jet holder; 'Comet' igniter for automatic ignition; unspillable pressure gauge; set of jets, ½, 1, 30, 45, 60, 100 and 200 cu.ft. per hour; stop-watch; set of meter adaptors; and rubber hose connecting tubes, two 8 ft. lengths.—*Meters, Ltd., 51, King Street, Manchester, 2.*

Stainless steel chemical pumps

By keeping to a minimum the number of components required to cover the range, and by means of close spigotted fits, the 'B-N' range of stainless steel pumps by Sigmund Pumps Ltd., offer a high degree of standardization.

These new units are described in a leaflet (No. 1026) obtainable from Sigmund. 'B-N' pumps are available for outputs from 5 gal. per minute up to 200 gal. per minute against heads from 10 ft. up to 250 ft. To cover this wide range of duties only two support frame assemblies (sizes 1a and 1) are used, but with these two support frame assemblies (comprising bearings, housing, shaft, shaft seal and stuffing box) a total of six different hydraulic units can be used. The impellers are designed so that a turned-down impeller gives, with the same casing, three or four different fields of duties and horsepower requirements.

Special attention has been given to effective sealing. A selection of methods of sealing is available, and any of these can be utilized on the 'B-N' pump without modification of the shaft or stuffing box.

Depending on the application and on the preference of the plant engineer, the pumps can be supplied with any of the following forms of sealing:

(a) Single mechanical seal No. 1A or No. 109.

(b) Double mechanical seal.

(c) Soft packing.

(d) Soft packing with a liquid sealing from external source.

It may not be possible to decide on a mechanical seal when a pump is initially installed, and in such cases it is advisable to start with a soft packed pump and fit the seal on site. The plant engineer can make this change without returning the pump to the factory.

In selecting '18/8/3' stainless steel as a basic material for the 'B-N' chemical pump range, the makers say they were guided by its high resistance to corrosion in chemical pump applications. The following are some typical applications for which the 'B-N' is used:

Nitric, all concentrations, 70F.
Sulphuric 10%, 70F.
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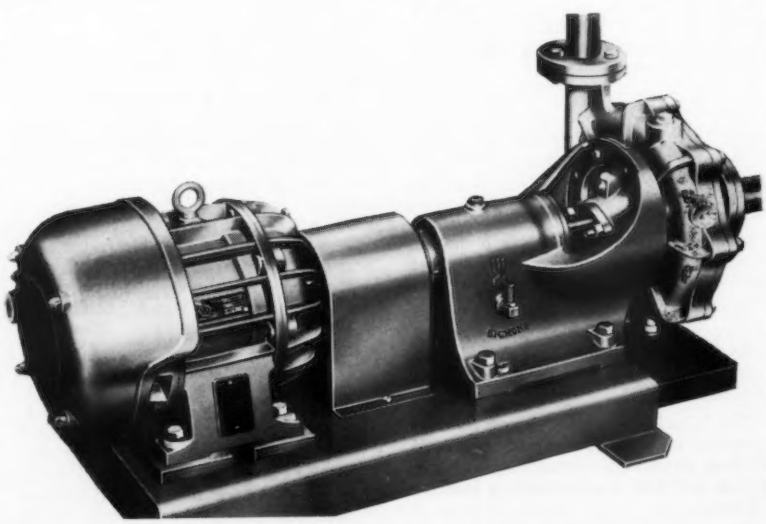
Cupric sulphate 10%, 70F.
Developers.

In addition to stainless steel, pumps are available in all-iron or all-bronze construction if required, using the same support frame as for stainless steel pumps.

The bearing bracket has been designed to meet the three basic requirements, namely protection of the bearings against the liquid handled, accessibility of the stuffing box and elimination of shaft deflection.

The design of the support frame is exceptionally suitable for easy maintenance and replacement of packing, and a liquid thrower and oil seal prevent contamination of the bearings even where there may be occasional seepage along the stainless steel shaft from the gland.

In standard form, the 'B-N' pump handles satisfactorily liquids at temperatures up to 220°F.—*Sigmund Pumps Ltd., Team Valley, Gateshead, 11, Co. Durham.*



Sigmund 'B-NE 5' stainless steel chemical pump.

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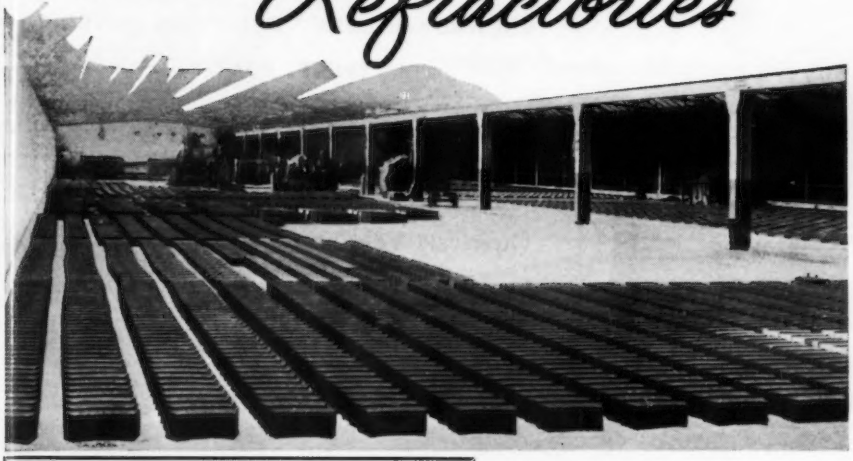

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Subscription Rates: Home and Empire:—60/- per annum; Foreign:—70/- per annum. (Both payable in advance.) A copy of the " Gas Journal " Calendar & Directory is presented each year to continuous subscribers.

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SCOTTISH GAS BOARD

PERTH GROUP
TECHNICAL ASSISTANT (DISTRIBUTION)

APPLICATIONS are invited for the post of Technical Assistant (Distribution) at Perth. Experience in Sales, Installations and/or Mainlaying work would be an advantage. The salary offered is Provincial Grade A A.P.T. 7 (£670-£750 per annum) with placing according to qualifications and experience. The post is pensionable, and the person appointed will be required to pass a medical examination.

Applications, stating age, education, training, qualifications and experience, should reach the undersigned within two weeks from the appearance of this advertisement.

W. NICOL BAIRD,
Group Manager.

SCOTTISH GAS BOARD

WESTERN GROUP
GREENOCK, GOUROCK, PORT GLASGOW AND SKELMORLIE DISTRICT
TECHNICAL ASSISTANT

APPLICATIONS are invited for the position of Technical Assistant at Greenock. The salary will be within grade A.P.T. VI (£610-£690 per annum) of the National Joint Council for Gas Staffs, Provincial A Scale, with placing according to qualifications and experience.

Candidates should have had experience in working of carbonizing and ancillary plant.

The successful candidate will be required to pass a medical examination and become a member of the Board's Superannuation Scheme.

Applications, stating age, experience and qualifications, should be addressed to the subscriber within 14 days of publication of this advertisement.

WILLIAM KIRK,
District Manager.

Inchgreen Gas Works,
Greenock.

April 19, 1956.

JUNIOR MALE ACCOUNTANT required by East Midlands Gas Board (Leicester and Northants Division). The post is suitable for an advanced student interested in financial and management accounting and statistics. Applicants should be sufficiently adaptable, with training, to apply theory to practice, and should also be willing to undertake necessary routine tasks as required. A modern punched card system is in course of installation.

The appointment will be made, initially, within the salary range £445/£690 per annum at a commencing salary commensurate with age and qualifications, but there will be opportunities for further progression for the right man.

The position is pensionable, and the successful candidate will be required to pass a medical examination.

Applications stating age, and giving full details of education, qualifications and experience, together with the names of two referees, should be addressed to reach Divisional General Manager, E.M.G.B., Millstone Lane, Leicester, not later than May 12, 1956.

EAST MIDLANDS GAS BOARD

NOTTS. & DERBY DIVISION
NOTTINGHAM UNDERTAKING
APPOINTMENT OF WORKS CHEMIST

APPLICATIONS are invited from suitably qualified persons for the position of WORKS CHEMIST at the Nottingham Undertaking.

Applicants should have a sound knowledge of the control of gas manufacture, and be experienced in the carrying out of all the usual gas works' tests.

The salary payable will be within Grade A.P.T. 8 (£710/£790) of the National Salary Scales commencing at a figure commensurate with qualifications and experience.

The position is pensionable, and the successful applicant will be required to pass a medical examination.

Applications stating age and giving details of education, qualifications and experience, together with the names of two referees, should be addressed to the undersigned not later than May 5, 1956.

K. L. PEARCE,
Divisional General Manager.

East Midlands Gas Board,
Notts. and Derby Division,
P.O. Box 62,
Friar Gate,
Derby.

EAST MIDLANDS GAS BOARD

LINCOLNSHIRE DIVISION
DEPUTY GROUP ACCOUNTANT—GRIMSBY GROUP

APPLICATIONS are invited from suitably qualified Accountants for the above appointment. Preference will be given to applicants who have experience of mechanised accounting and who are used to the control of staff.

The salary range will be £755/£855 (A.P.T. 9) per annum, the commencing salary to be determined in accordance with the experience and qualifications of the successful candidate.

The post is pensionable and the successful candidate will be required to pass a medical examination.

Applications, stating age, education, qualifications, experience, present appointment and salary, together with the names of two referees, should be sent to the undersigned, to be received not later than May 5, 1956.

BERNARD CLARKE,
Divisional General Manager.

Belle Vue House,
Carline Road,
Lincoln.

WALES GAS BOARD

SALES SUPERINTENDENT—RHONDDA UNDERTAKING

APPLICATIONS are invited for the above appointment.

Candidates should be fully experienced in all aspects of domestic and commercial gas sales, including showroom management, publicity, estimating, sales campaigns, district canvassing, home service work and dealing with consumer complaints. The person appointed will be required to maintain close liaison with Local Authorities, Architects and Builders in the area.

The salary for the post will be in accordance with Grade A.P.T. 7 (Provincial 'A') (£670/750) of the National Salary Scale for Gas Staffs, with placing according to experience and qualifications. The post is pensionable.

The successful applicant may be required to pass a medical examination.

Application, stating age, particulars of training, qualifications and experience, together with the names of two referees, should be addressed to the undersigned not later than fourteen days after the appearance of this advertisement.

ELWYN JONES,
Engineer and Manager.

Gas Offices,
Ystrad Road,
Pentre, Rhondda.

PLANT FOR SALE

NEW AND RECONDITIONED SQUIRREL CAGE MOTORS

H.P.	Make	Enclosure	R.P.M.
40	Laurence Scott	Totally enc.	940
40	Metro-Vick	Ventilated	975
35	Brooks	Totally enc.	500
30	Metro-Vick	Screen Prot.	450
30	G.E.C.	Screen prot.	720
28	L.D.C.	Screen prot.	720
28/14	L.D.C.	Screen prot.	720/360
25	Laurence Scott	Totally enc.	960
25	Sturtevant	Totally enc.	440
22	L.D.C.	Screen prot.	720
22/11	L.D.C.	Screen prot.	720/360
20	L.D.C.	Screen prot.	460
20	L.D.C.	Screen prot.	450
20	Wright	Screen prot.	440
20	L.D.C.	Screen prot.	440
20	Brooks	Screen prot.	750
19	E.E.C.	Totally enc.	460
18	Brooks	Totally enc.	1430
15	Brooks	Totally enc.	955
12	Crompton Parkinson	Screen prot.	725
10	Brooks	Totally enc.	960
10	G.E.C.	Screen prot.	720
10	Crompton Parkinson	Screen prot.	580
10	E.E.C.	Screen prot.	570/720
7.5	Crompton Parkinson	Totally enc.	720
5	Metro-Vick	Totally enc.	2920
5	Brooks	Totally enc.	1440
5	Metro-Vick	Screen prot.	1430
5	E.E.C.	Totally enc.	940
4.5	Metro-Vick	F.L.P.	976
4	E.E.C.	Screen prot.	1450
3	Brooks	Totally enc.	3000
3	Laurence Scott	Screen prot.	2900

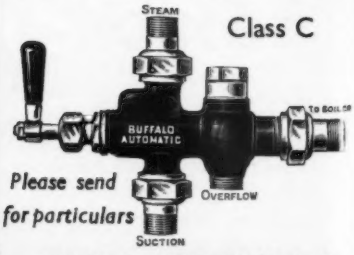
Also available a large selection of Slip Ring Motors and Miscellaneous Electrical Equipment.

For full particulars apply:
JAMES N. CONNELL LIMITED,
UNION WORKS,
COATBRIDGE,
SCOTLAND.

Tel. No.: Coatbridge 1121 (5 lines)

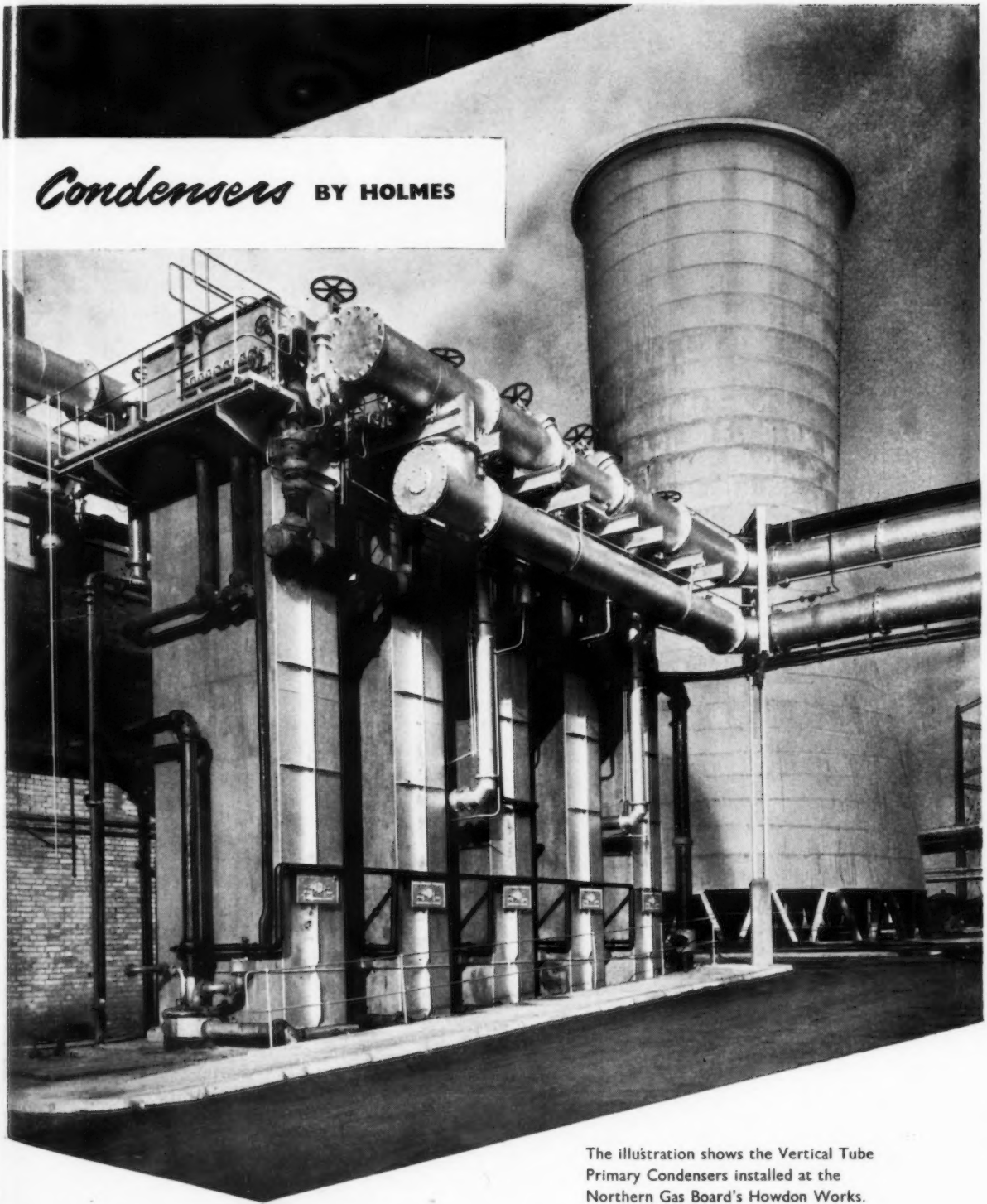
The
LIMIT OF EFFICIENCY CAN BE REACHED
by the use of
LUX
GAS PURIFYING MATERIAL
Sole Importers:
HARRISONS (London) LIMITED
66, Mark Lane, LONDON, E.C.3
Telegrams: Birchrock, London *Telephone* ROYal 3120

BUFFALO INJECTORS



Please send for particulars

GREEN & BOULDING, Ltd.
162a Dalston Lane, London, E.8



Condensers **BY HOLMES**

The illustration shows the Vertical Tube Primary Condensers installed at the Northern Gas Board's Howdon Works. Capacity 10,000,000 cu. ft. per day.

Please write for publication No. 60/5

FOUNDED 1850
HOLMES
HUDDERSFIELD

W. C. HOLMES & CO. LTD

TURNBRIDGE · HUDDERSFIELD

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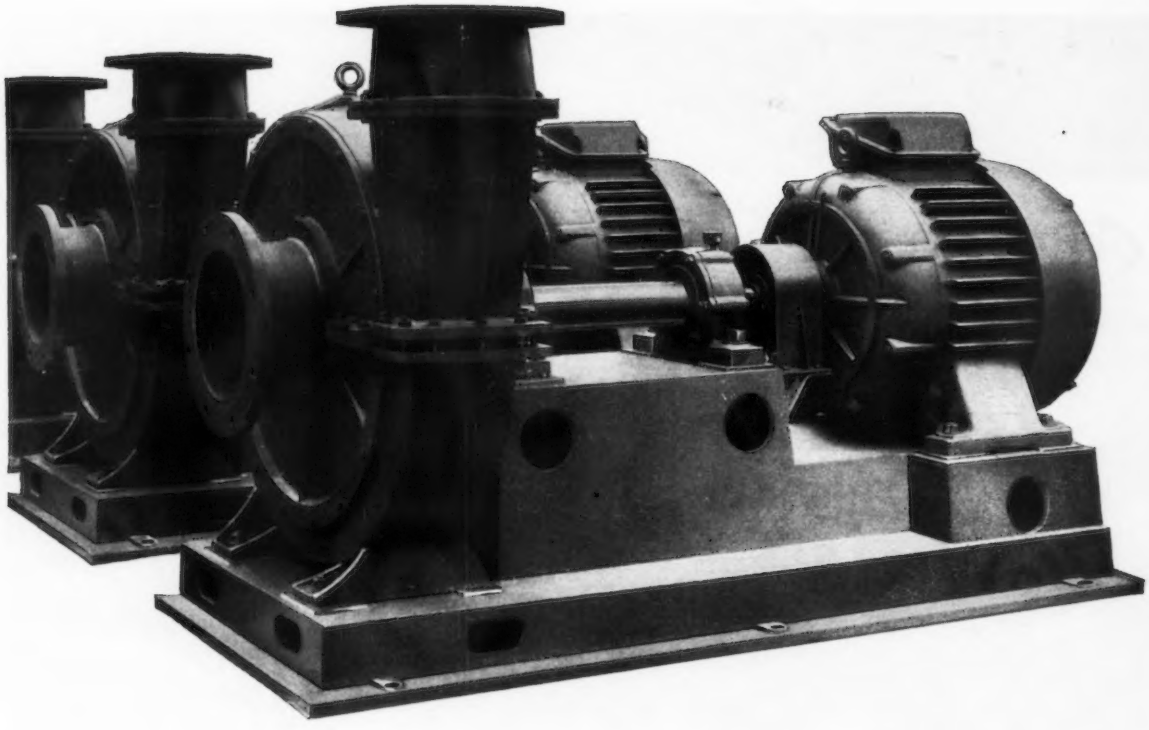
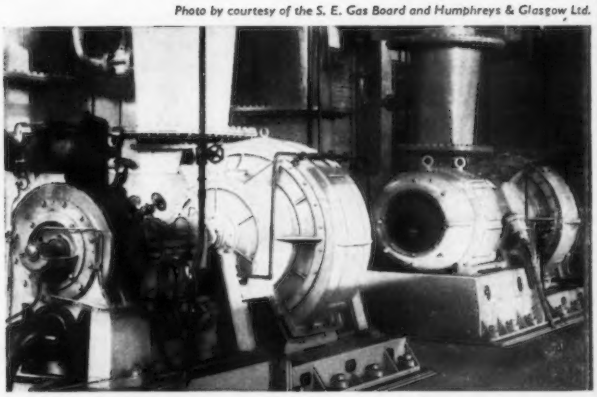


Gas Boosters?

Photo by courtesy of the S. E. Gas Board and Humphreys & Glasgow Ltd.



EXAMPLES of gas boosting fans with cast iron casings are illustrated here. They represent the results of special attention to the design and development of robust, trouble-free boosters over the years. This experience provides fans for handling volumes of 5,000 to 1½ million cubic feet of gas per hour at pressures up to several pounds per square inch.
When the time comes you'll find there's no easier way to solve your air or gas moving problem than to put it to Keith Blackman.

contact **Keith Blackman Ltd**

MILL MEAD ROAD · LONDON · N17 · TOTtenham 4522

T.A.7225/6

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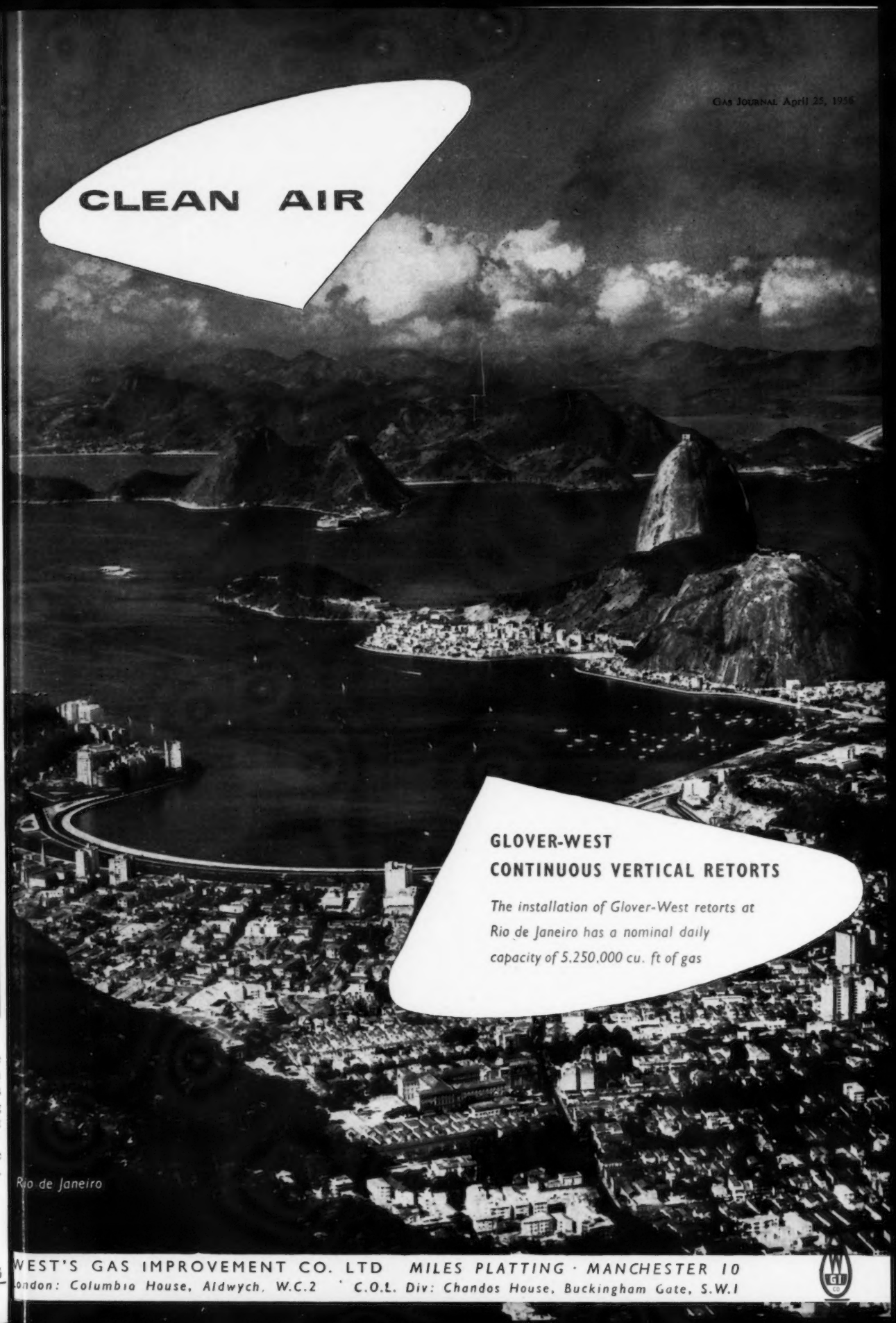
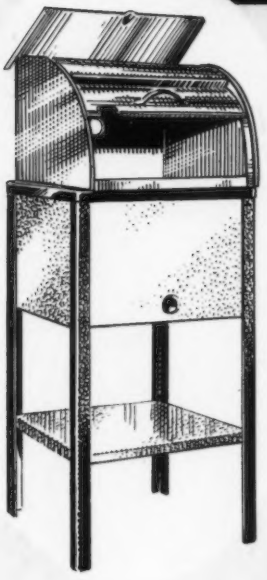

CLEAN AIR
GLOVER-WEST
CONTINUOUS VERTICAL RETORTS
The installation of Glover-West retorts at Rio de Janeiro has a nominal daily capacity of 5,250,000 cu. ft of gas
Rio de Janeiro

WEST'S GAS IMPROVEMENT CO. LTD MILES PLATTING · MANCHESTER 10
London: Columbia House, Aldwych, W.C.2 · C.O.L. Div: Chandos House, Buckingham Gate, S.W.1

METROPOLITAN

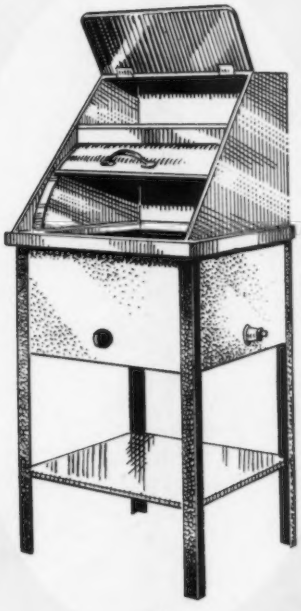
Commercial Appliances



Colwin Commercial appliances are widely used throughout the country in Hotels, Guest Houses, Cafes, etc. Easily cleaned surfaces. The ranges are finished in Vitreous enamel with either Tinned or Stainless Steel Topwork. The Hot Cupboards in Stove enamel with Vitreous enamel working top.

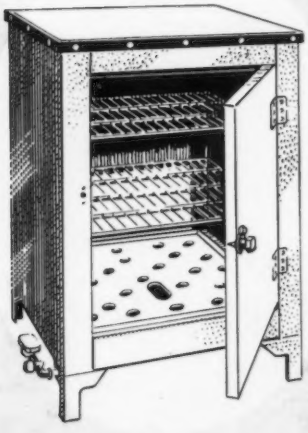
'COLWIN 1'
CHIP AND FISH RANGE

A compact range with a Pan 13" × 13" × 7" in dimension to supply small quantities of chipped potatoes at short notice.



'COLWIN 2'
CHIP AND FISH RANGE

A Larger equally attractive range with Pan size 18" × 16" × 7" for speedy production of larger quantities of chipped potatoes.



The 'COLWIN'
HOT CUPBOARD

An inexpensive warming oven for use where it is necessary to keep hot, dishes, plates and meals. Right or left hand, or double doors.

DIMENSIONS: 2' 11" high 2' 0" deep 2' 0" wide

METROPOLITAN METERS (North Wales) LTD
CLAUGHTON RD., COLWYN BAY

Leaflets and Technical Details supplied on request